TEST REPORT

Reference No......	:	WTS16S0551685-1E
FCC ID.....	:	UC7H60
Applicant.....	:	Audix Corporation
Address.....	:	9400 SW Barber Street, Wilsonville, Oregon 97070, United States
Manufacturer	:	Relacart Electronics Co., Ltd.
Address.....	:	No. 10 Fuxing Road, Pingshi Industrial District, Enping City, Guangdong, China-529400
Product Name.....	:	Wireless microphone Handheld Transmitter
Model No.....	:	H60
Brand......	:	AUDIX
Standards.....	:	FCC CFR47 Part 74
Date of Receipt sample.....	:	May 27, 2016
Date of Test.....	:	May 28 – Jul. 10, 2016
Date of Issue.....	:	Jul. 15, 2016
Test Result.....	:	**Pass**

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company.The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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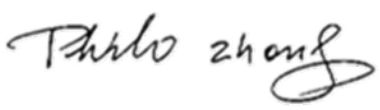
Compiled by:

Zero Zhou / Test Engineer

Approved by:



Philo Zhong / Manager

2 Test Summary

Test Items	Test Requirement	Test Method	Result
RF Output Power	74.861(e)(1)(ii)	ANSI/TIA-603-D:2010	PASS
Modulation Characteristics	74.861 (e) (3)	ANSI/TIA-603-D:2010	PASS
Occupied Bandwidth	2.1049(c)(1)	ANSI/TIA-603-D:2010	PASS
Radiated Emissions	2.1053 & 74.861(e)(6)	ANSI/TIA-603-D:2010	PASS
Spurious emissions at antenna terminals	2.1051	ANSI/TIA-603-D:2010	PASS
Frequencies Stability	2.1055(a)(1)	ANSI/TIA-603-D:2010	PASS
RF Exposure	1.1307(b)(1)	KDB 447498 D01	PASS
Remark: PASS means that the test results complies with related requirements. N/A means that the test is not applicable for the EUT.			

3 Contents

4 General Information

4.1 General Description of E.U.T.

Product Name : Wireless microphone Handheld Transmitter

Model No. : H60

Differences describe : N/A

Operation Frequency : 522.100MHz-585.575MHz, 207channels

The Lowest Oscillator : 16MHz

Antenna installation : Internal permanently attached antenna

Antenna Gain :1dBi(Max.)

Modulation : FM

Rated System Deviation :± 30KHz

Maximum System Deviation :± 75KHz

4.2 Details of E.U.T.

Technical Data: : DC 3V by 2*1.5V(size “AA”) batteries

4.3 Channel Plan & List

Band A Channel List(522.100MHz-554.125MHz)

Group / Channel	1	2	3	4	5	6	7	8	9	10
1	545.625	541.475	547.475	554.125	553.300	553.625	553.600	553.450	550.500	551.725
2	544.500	541.075	547.075	549.675	551.625	547.350	552.975	549.700	547.875	550.500
3	543.575	540.450	546.450	548.650	544.925	543.475	552.150	548.775	546.425	549.575
4	542.350	539.625	542.850	548.125	541.600	542.400	551.750	547.325	545.500	548.125
5	535.075	538.500	535.475	529.475	540.450	538.350	551.025	544.700	541.750	545.500
6	533.625	537.575	534.450	529.075	527.325	535.500	527.625	543.475	538.925	544.275
7	531.575	536.850	532.500	528.450	526.075	533.950	526.500	534.625	537.475	535.425
8	530.850	536.350	530.350	524.850	525.525	528.075	525.575	532.750	534.150	533.550
9				524.350	524.525	526.375	523.475	530.675	532.600	531.475
10					522.100	525.800	523.075	530.250	530.500	531.050
11							522.450	525.150	528.100	525.950
12								522.350	523.750	523.150
13										522.525

Band B Channel List(554.250MHz-585.575MHz)

Group / Channel	1	2	3	4	5	6	7	8	9	10
1	583.475	585.575	584.500	584.675	584.400	584.825	583.350	584.675	585.375	584.400
2	583.075	584.850	578.125	582.600	582.350	579.125	581.600	582.600	584.500	582.350
3	582.450	559.600	571.450	579.400	581.475	578.625	573.825	581.750	581.150	581.475
4	581.625	558.975	565.600	571.600	579.125	574.475	572.800	579.400	580.600	579.125
5	580.500	557.750	564.975	570.975	577.600	567.550	571.550	578.375	579.200	578.100
6	579.575	557.025	564.150	570.150	576.975	566.000	570.775	577.150	578.125	577.100
7	578.350	555.675	563.025	569.750	576.150	561.100	569.050	576.650	577.450	576.375
8		554.650	561.675	569.025	575.025	557.075	565.700	575.300	576.100	575.850
9			560.125	567.675	573.675	555.300	561.075	574.450	575.250	574.825
10				566.125	572.125			571.450	572.250	573.475
11								564.700	565.500	572.850
12								562.600	563.400	570.050
13								561.050	561.850	564.525
14								556.275	557.075	562.450
15									554.250	560.575

4.4 Test Facility

The test facility has a test site registered with the following organizations:

- **IC – Registration No.: 7760A-1**

  Waltek Services (Shenzhen) Co., Ltd. has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration 7760A-1, October 15, 2015

- **FCC Test Site 1#– Registration No.: 880581**

  Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory `has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 880581, April 29, 2014.

- **FCC Test Site 2#– Registration No.: 328995**

  Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory `has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 328995, December 3, 2014.

5 Equipment Used during Test

5.1 Equipments List

3m Semi-anechoic Chamber for Radiation Emissions Test site 1#						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1	EMC Analyzer	Agilent	E7405A	MY45114943	Sep.15,2015	Sep.14,2016
2	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	Sep.15,2015	Sep.14,2016
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	Apr.19,2016	Apr.18,2017
4	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	Sep.15,2015	Sep.14,2016
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	Apr.19,2016	Apr.18,2017
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	Apr.19,2016	Apr.18,2017
7	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	Mar.17,2016	Mar.16,2017
8	Coaxial Cable (above 1GHz)	Top	1GHz-25GHz	EW02014-7	Apr.10,2016	Apr.09,2017
3m Semi-anechoic Chamber for Radiation Emissions Test site 2#						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No**	**Last Calibration Date**	**Calibration Due Date**
1	Test Receiver	R&S	ESCI	101296	Sep.15,2015	Sep.14,2016
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	Sep.15,2015	Sep.14,2016
3	Amplifier	Compliance pirection systems inc	PAP-0203	22024	Sep.15,2015	Sep.14,2016
4	Cable	HUBER+SUHNER	CBL2	525178	Sep.15,2015	Sep.14,2016
RF Conducted Testing						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1.	EMC Analyzer (9k~26.5GHz)	Agilent	E7405A	MY45114943	Sep.15,2015	Sep.14,2016
2.	Spectrum Analyzer (9k-6GHz)	R&S	FSL6	100959	Sep.15,2015	Sep.14,2016
3.	Signal Analyzer (9k~26.5GHz)	Agilent	N9010A	MY50520207	Sep.15,2015	Sep.14,2016

5.2 Measurement Uncertainty

Parameter	Uncertainty
Radio Frequency	± 1 x 10^{-6}
RF Power	± 1.0 dB
RF Power Density	± 2.2 dB
Radiated Spurious Emissions test	± 5.03 dB (Bilog antenna 30M~1000MHz)
	± 4.74 dB (Horn antenna 1000M~25000MHz)

5.3 Test Equipment Calibration

All the test equipments used are valid and calibrated by CEPREI Certification Body that address is No.110 Dongguan Zhuang RD. Guangzhou, P.R.China.

6 RF Output Power

Test requirement: FCC CFR47 Part 74 Section 74.861(e)(1)(ii)

Test method: Based on ANSI/TIA-603-D:2010

Limit: According to Part 74.861(e)(1)(ii), the output power shall not exceed 250mW (23.98 dBm).

6.1 Test Procedure

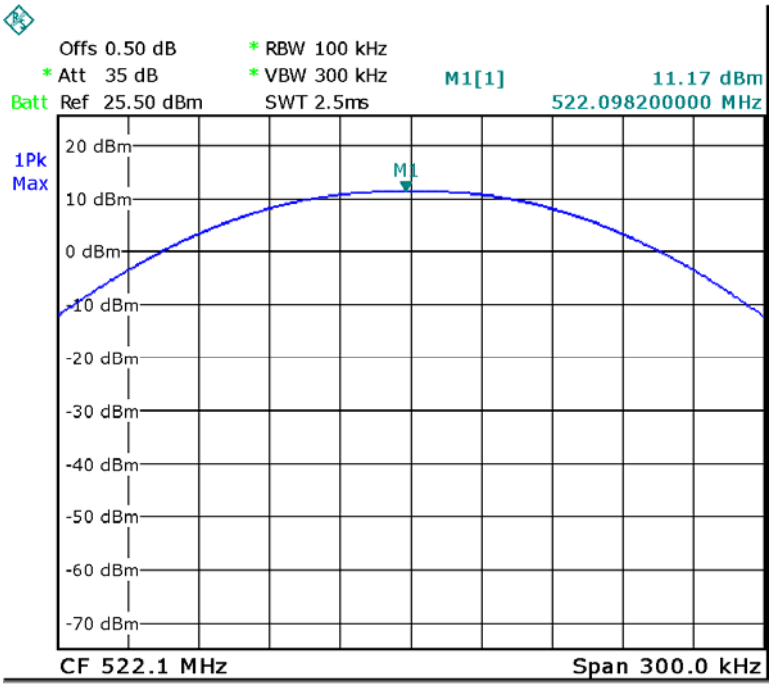
The maximum peak output power was measured with a spectrum analyzer connected to the antenna terminal (conducted measurement) while EUT was operating in normal situation.

6.2 Test result

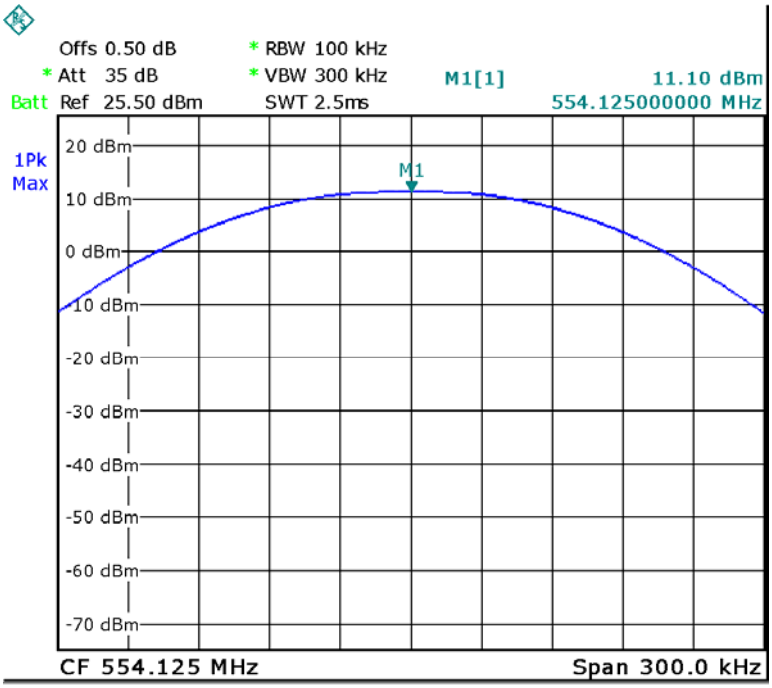
Power	Frequency (MHz)	RF Output Power (dBm)	Limit (dBm)	Result
Low	522.100	11.17	23.98	PASS
	554.125	11.10	23.98	PASS
	585.575	11.87	23.98	PASS
High	522.100	15.81	23.98	PASS
	554.125	16.13	23.98	PASS
	585.575	15.71	23.98	PASS

Please refer to following plot:

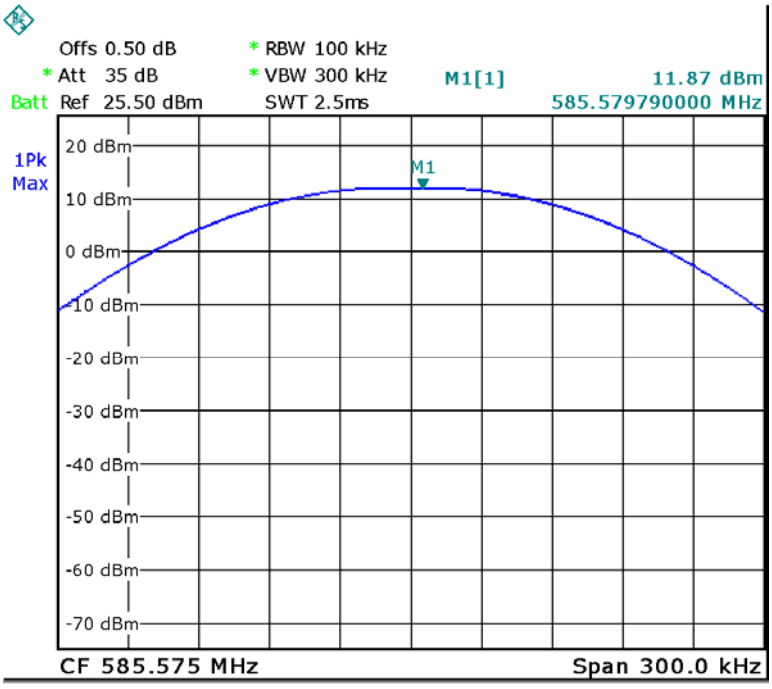
Low Power
Low channel



Middle channel

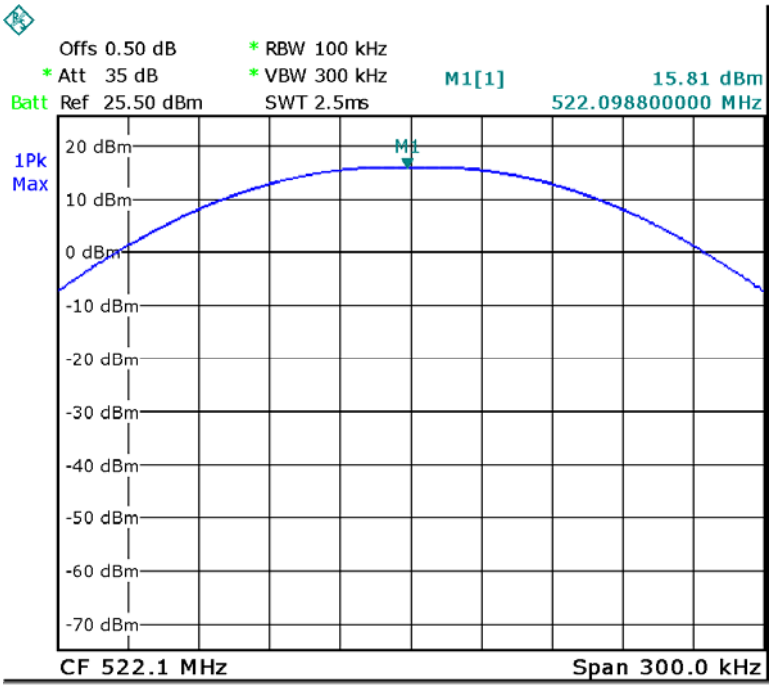


High channel

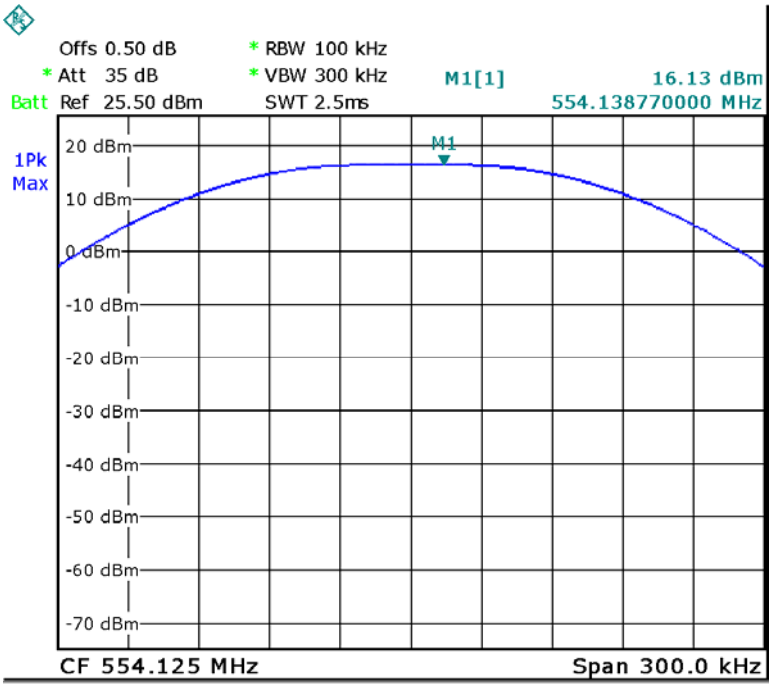


Please refer to following plot:

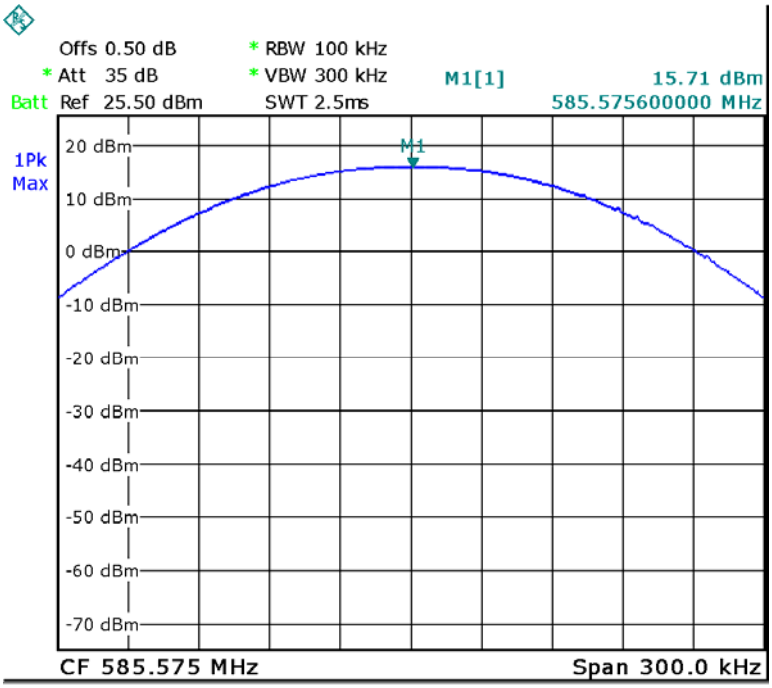
High Power
Low channel



Middle channel



High channel



7 Modulation Characteristics

Test requirement: FCC CFR47 § 74.861 (e) (3)

Test method: Based on ANSI/TIA-603-D:2010

Requirement: Any form of modulation may be used.

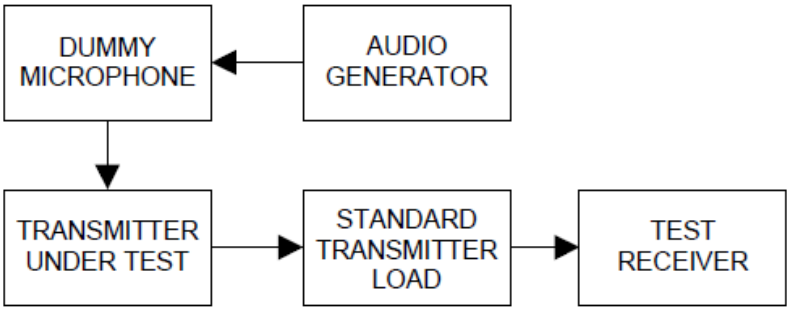
A maximum deviation of ±75kHz is permitted when frequency modulation is employed.

7.1 Test Procedure

Modulation Limiting (TIA-603D:2010 Section 2.2.3)

Modulation limiting is the transmitter circuit's ability to limit the transmitter from producing deviations in excess of a rated system deviation.

Method of Measurement



a) Connect the equipment as illustrated.

b) Adjust the transmitter per the manufacturer's procedure for full rated system deviation.

c) Set the test receiver to measure peak positive deviation. Set the audio bandwidth for ≤0.25 Hz to ≥15,000 Hz. Turn the de-emphasis function off.

d) Apply a 1000 Hz modulating signal to the transmitter from the audio frequency generator, and adjust the level to obtain 60% of full rated system deviation.

e) Increase the level from the audio frequency generator by 20 dB in one step (rise time between the 10% and 90% points shall be 0.1 second maximum).

f) Measure both the instantaneous and steady-state deviation at and after the time of increasing the audio input level.

g) With the level from the audio frequency generator held constant at the level obtained in step e), slowly vary the audio frequency from 300 Hz to 3000 Hz and observe the steady-state deviation. Record the maximum deviation.

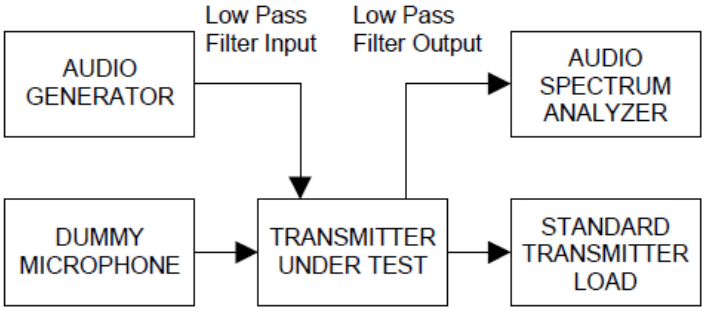
h) Set the test receiver to measure peak negative deviation and repeat steps d) through g).

i) The values recorded in steps g) and h) are the modulation limiting.

Audio Low Pass Filter Response (TIA-603D:2010 Section 2.2.15)

The audio low pass filter response is the frequency response of the post limiter low pass filter circuit above 3000 Hz.

Method of Measurement



a) Connect the equipment as illustrated.

b) Connect the audio frequency generator as close as possible the input of the post limiter low pass filter within the transmitter under test.

c) Connect the audio spectrum analyzer to the output of the post limiter low pass filter within the transmitter under test.

d) Apply a 1000 Hz tone from the audio frequency generator and adjust the level per manufacturer's specifications.

e) Record the dB level of the 1000 Hz spectral line on the audio spectrum analyzer as $LEV_{REF.}$

f) Set the audio frequency generator to the desired test frequency between 3000 Hz and the upper low pass filter limit.

g) Record audio spectrum analyzer levels, at the test frequency in step f).

h) Record the dB level on the audio spectrum analyzer as LEV_{FREQ} .

i) Calculate the audio frequency response at the test frequency as:

$$low\ pass\ frequency\ response = LEV_{FREQ} - LEV_{REF}$$

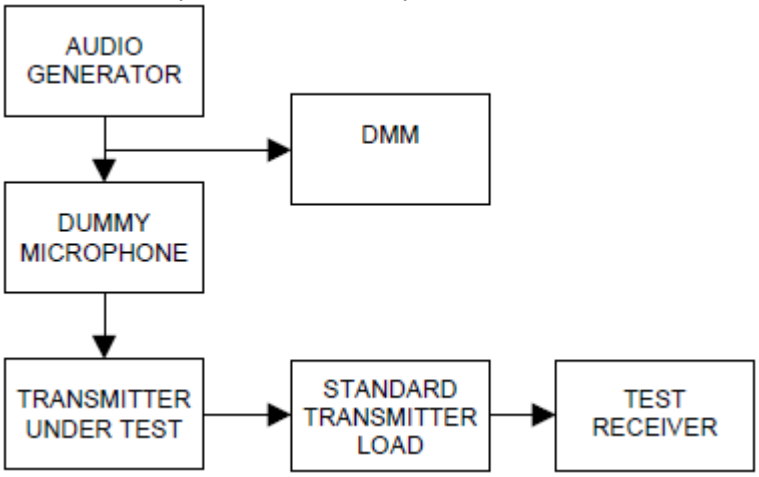
j) Repeat steps f) through i) for all the desired test frequencies.

Audio Frequency Response (TIA-603D:2010 Section 2.2.6)

The audio frequency response is the degree of closeness to which the frequency deviation of the transmitter follows a prescribed characteristic.

Method of Measurement

Constant deviation test method (300 Hz to 3000 Hz)



a) Connect the equipment as illustrated.

b) Set the test receiver to measure peak positive deviation. Set the audio bandwidth for ⩽50 Hz to ⩾15,000 Hz. Turn the de-emphasis function off.

c) Set the DMM to measure rms voltage.

d) Adjust the transmitter per the manufacturer's procedure for full rated system deviation.

e) Apply a 1000 Hz tone and adjust the audio frequency generator to produce 20% of the rated system deviation.

f) Set the test receiver to measure rms deviation and record the deviation reading.

g) Record the DMM reading as VREF .

h) Set the audio frequency generator to the desired test frequency between 300 Hz and 3000 Hz.

i) Vary the audio frequency generator output level until the deviation reading that was recorded in step f) is obtained.

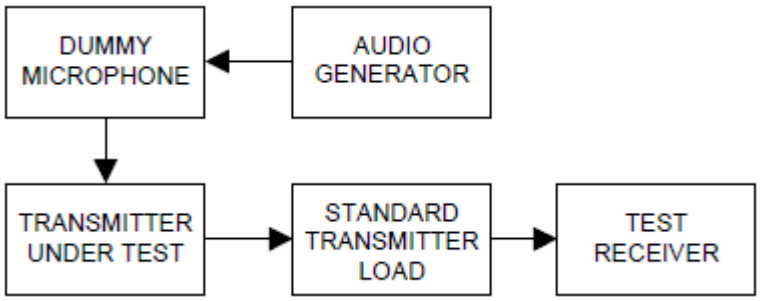
j) Record the DMM reading as VFREQ .

k) Calculate the audio frequency response at the present frequency as:

$$audio\ frequency\ response = 20\ \log_{10}\left(\frac{V_{FREQ}}{V_{REF}}\right)$$

l) Repeat steps h) through k) for all the desired test frequencies.

Constant Input Test Method (300 Hz to 3000 Hz)



a) Connect the equipment as illustrated.

b) Set the test receiver to measure peak positive deviation. Set the audio bandwidth for ≤50 Hz to ≥15,000 Hz. Turn the de-emphasis function off.

c) Adjust the transmitter per the manufacturer's procedure for full rated system deviation.

d) Apply a 1000 Hz tone and adjust the audio frequency generator to produce 20% of the rated system deviation.

e) Set the test receiver to measure rms deviation and record the deviation reading as DEVREF .

f) Set the audio frequency generator to the desired test frequency between 300 Hz and 3000 Hz.

g) Record the test receiver deviation reading as DEVFREQ .

h) Calculate the audio frequency response at the present frequency as:

$$audio\ frequency\ response = 20\ \log_{10}\left(\frac{DEV_{FREQ}}{DEV_{REF}}\right)$$

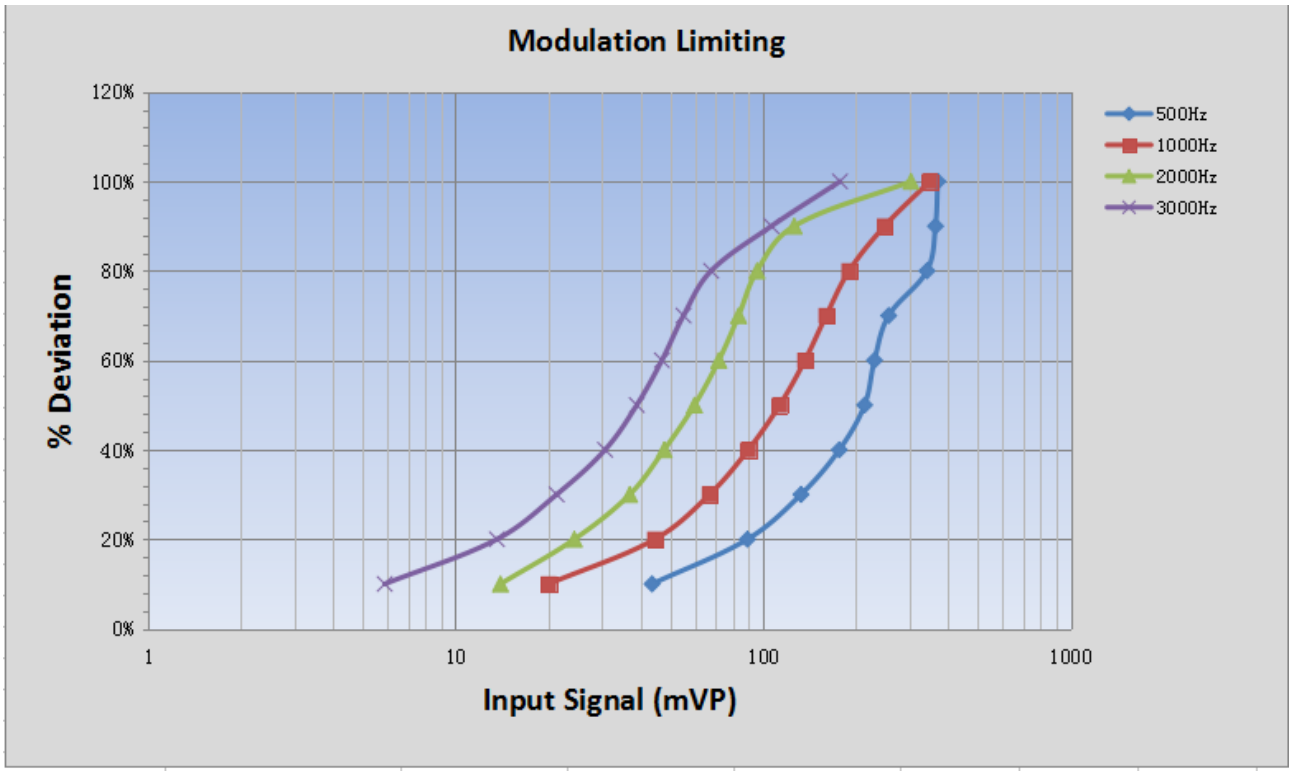
i) Repeat steps f) through h) for all the desired test frequencies.

7.2 Test Result

Modulation Limiting Test Result

Middle Channel

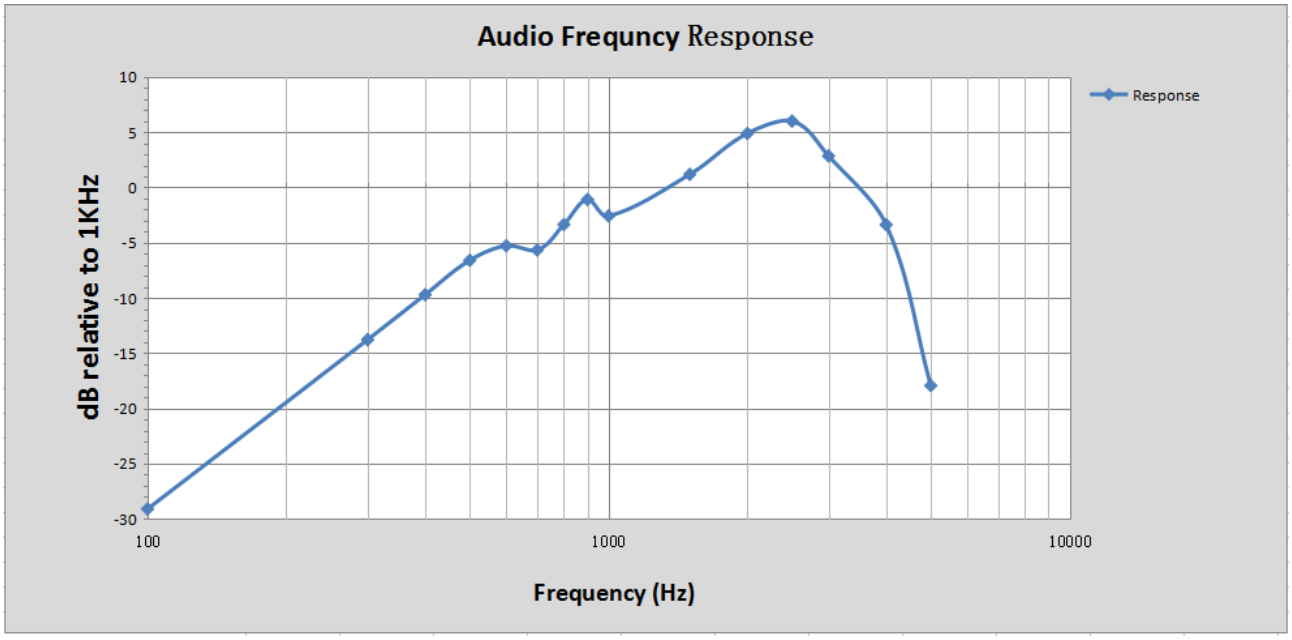
% Deviation	Input Signal (mVP)			
	500 Hz	1000 Hz	2000 Hz	3000 Hz
10%	44	20	14	6
20%	89	44	24	14
30%	133	67	37	21
40%	177	90	48	31
50%	214	113	60	39
60%	230	137	72	47
70%	256	161	83	55
80%	341	191	96	68
90%	364	248	126	107
100%	370	348	303	178



Audio Frequency Response Test Result

Middle channel

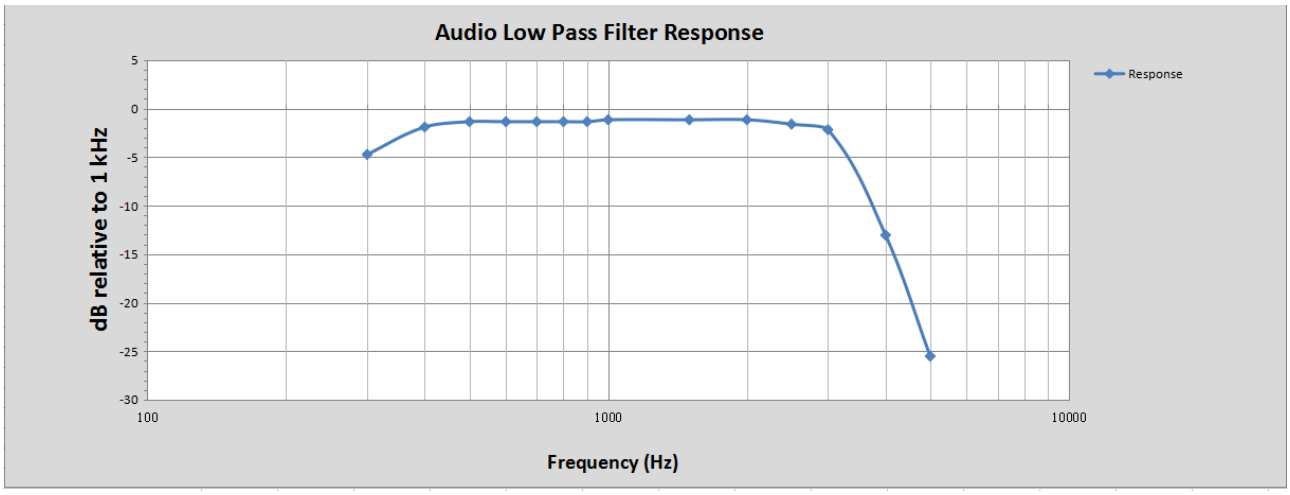
Frequency(Hz)	Audio Frequency Response(Hz)	Audio Frequency Response(dB)
100	28	-29.1
300	189	-13.8
400	318	-9.7
500	389	-6.6
600	458	-5.3
700	528	-5.7
800	599	-3.4
900	658	-1.1
1000	738	-2.6
1500	1119	1.2
2000	1478	4.9
2500	1839	6.0
3000	1979	2.9
4000	638	-3.4
5000	108	-17.9



Audio Low Pass Filter Response Test Result

Middle channel

Frequency(Hz)	Audio Frequency Response(Hz)	Audio Frequency Response(dB)
300	1040	-4.7
400	1411	-1.9
500	1471	-1.4
600	1471	-1.4
700	1471	-1.4
800	1471	-1.4
900	1471	-1.4
1000	1480	-1.2
1500	1480	-1.2
2000	1480	-1.2
2500	1530	-1.6
3000	1424	-2.2
4000	371	-13.0
5000	55	-25.5



8 Occupied Bandwidth of Emission

Test requirement: FCC CFR47 Part 2 Section 2.1049©(1)

Test method: Based on ANSI/TIA-603-D:2010

Limit: According to FCC 74.861 (e)(5), the frequency emission bandwidth shall not exceed 200 kHz.

8.1 Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Turn on the EUT and set it to any one convenient frequency within its operating range.

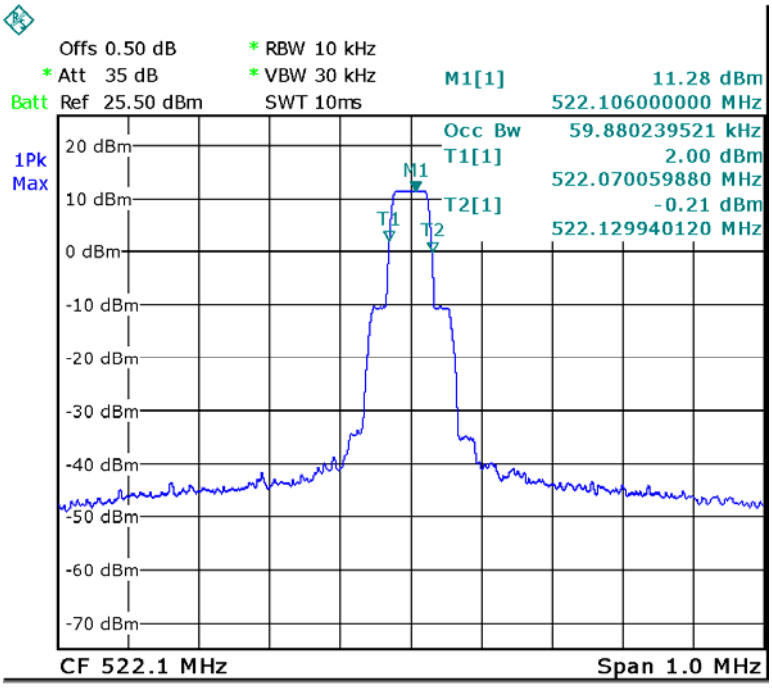
8.2 Test Result

power	Frequency (MHz)	99% Bandwidth (kHz)	Limit (kHz)	Result
Low	522.100	59.880	200	PASS
	554.125	59.880	200	PASS
	585.575	59.880	200	PASS
High	522.10	59.880	200	PASS
	554.125	59.880	200	PASS
	585.575	59.880	200	PASS

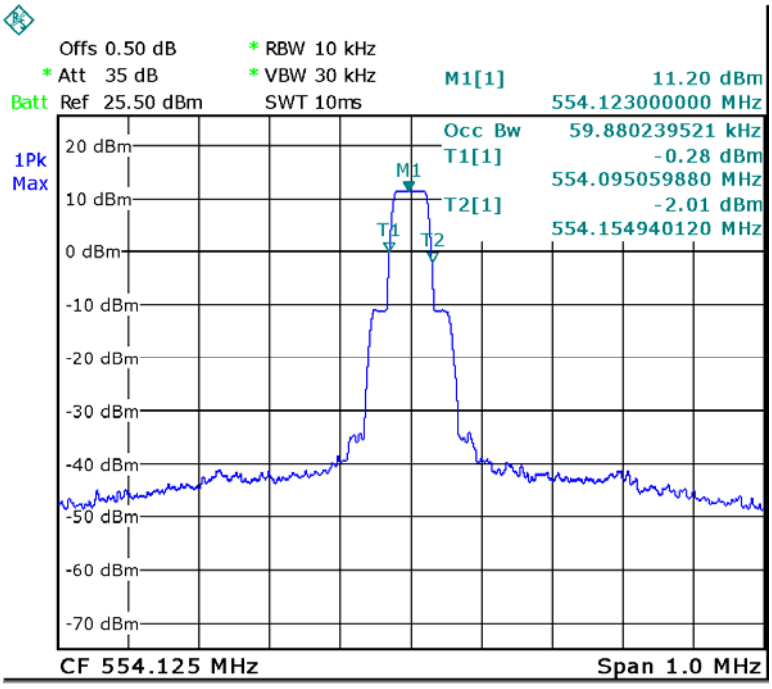
Test Plot:

Low power

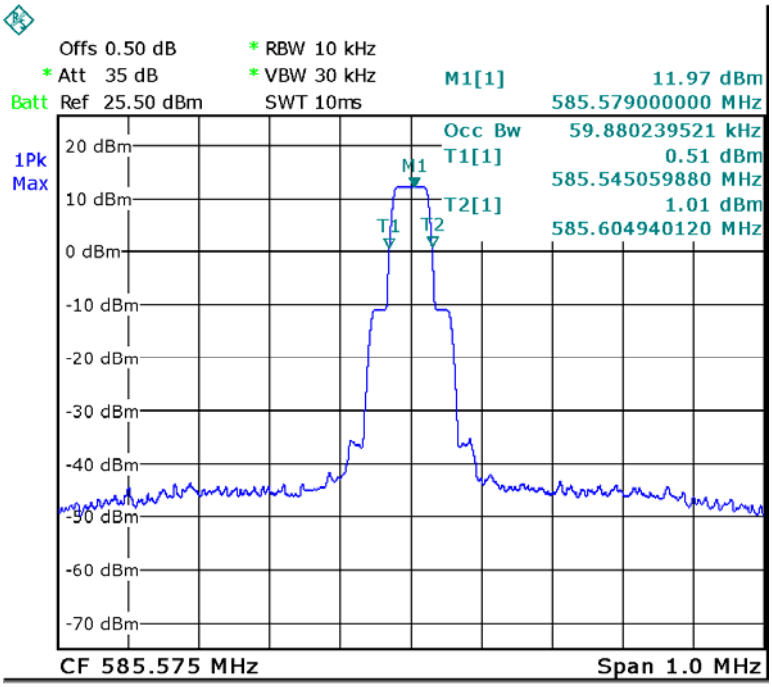
Low channel



Middle channel



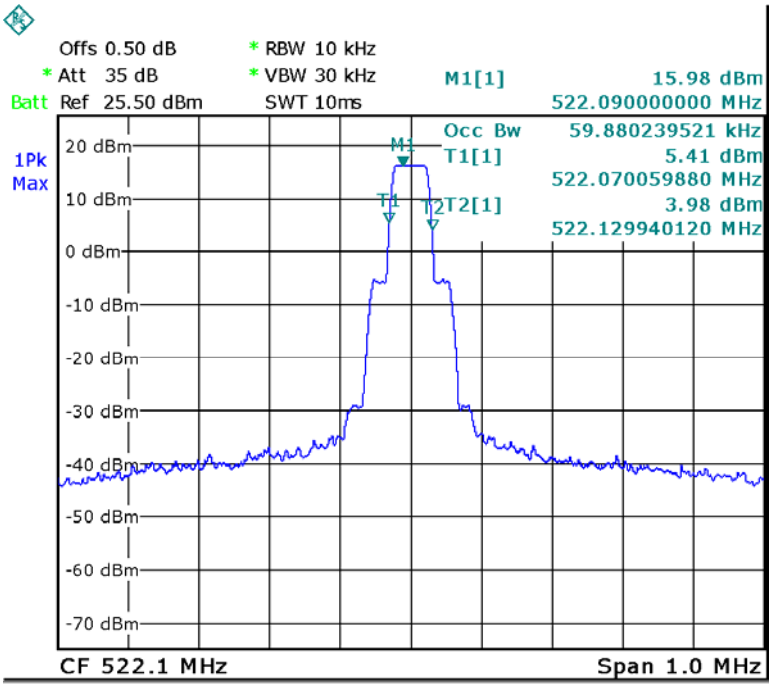
High channel



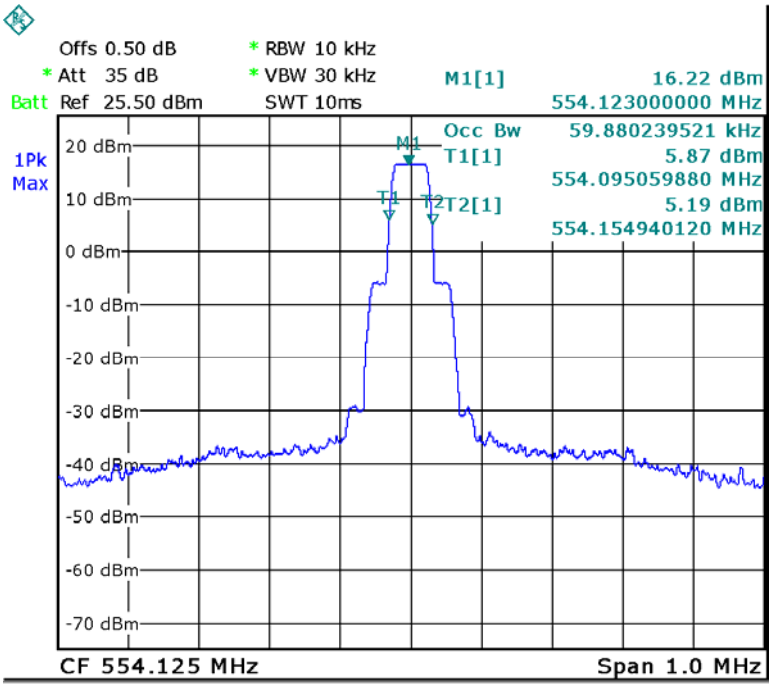
Test Plot:

High power

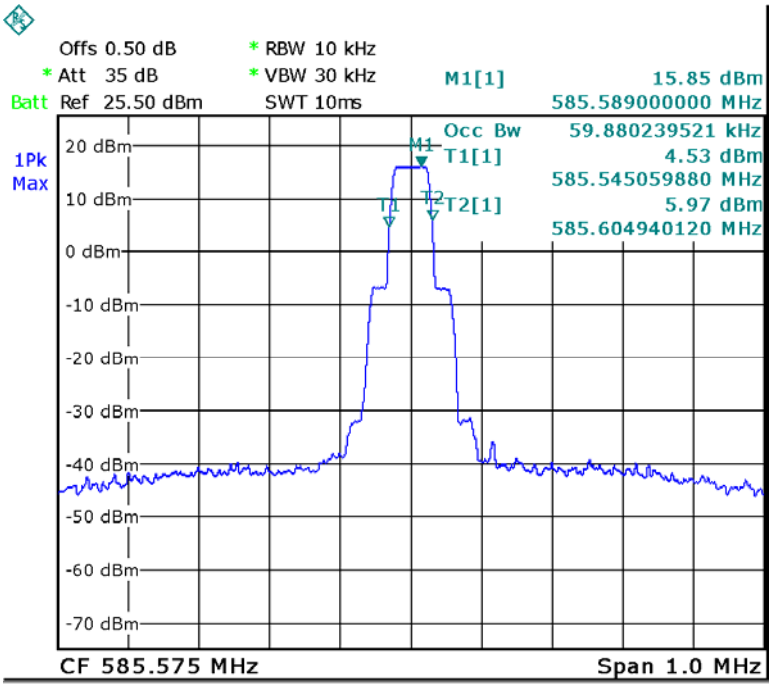
Low channel



Middle channel



High channel



9 Spurious Emissions at Antenna Terminals

Test requirement:	FCC CFR47 Part 2 Section 2.1053
Test method:	Based on ANSI/TIA-603-D:2010
Limit:	According to Part 74.861 (e)(6), the mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule: (i) on any frequency removed from the operating frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: at least 25 dB. (ii) on any frequency removed from the operating frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: at least 35 dB. (iii) on any frequency removed from the operating frequency by more than 250 percent up to and the authorized bandwidth shall be attenuated below the un-modulated carrier by at least 43 + 10 Log (output power in watts)dB.

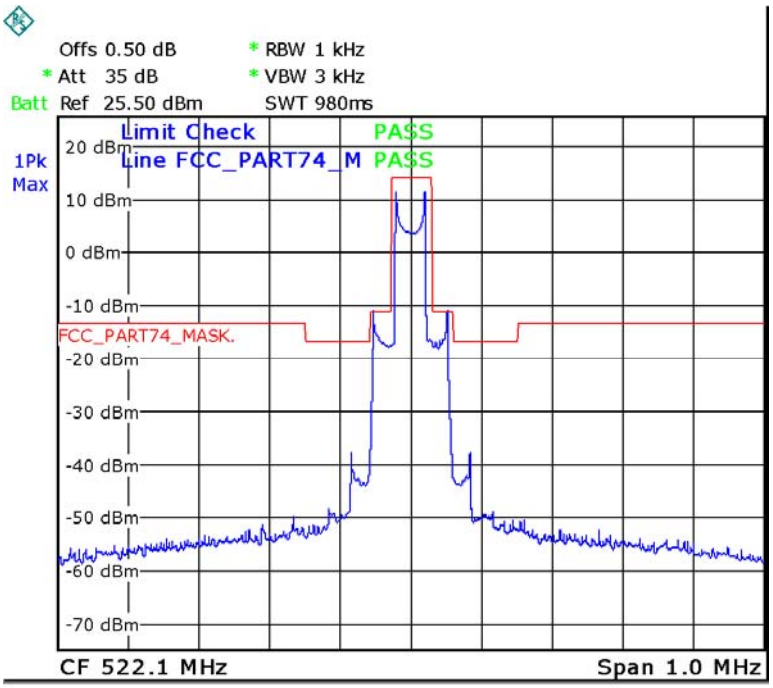
9.1 Test Procedure

1. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
2. Set the SA on Max-Hold Mode, and then keep the EUT in transmitting mode. Record all the signals from each channel until each one has been recorded.
3. Set the SA on View mode and then plot the result on SA screen.
4. Repeat above procedures until all frequencies measured were complete.

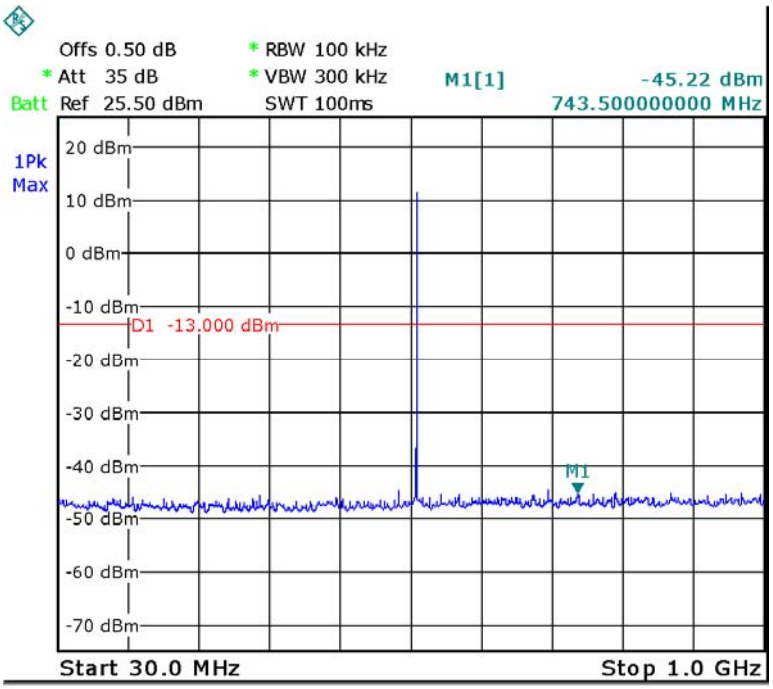
9.2 Test Data

Low Power Emission Mask

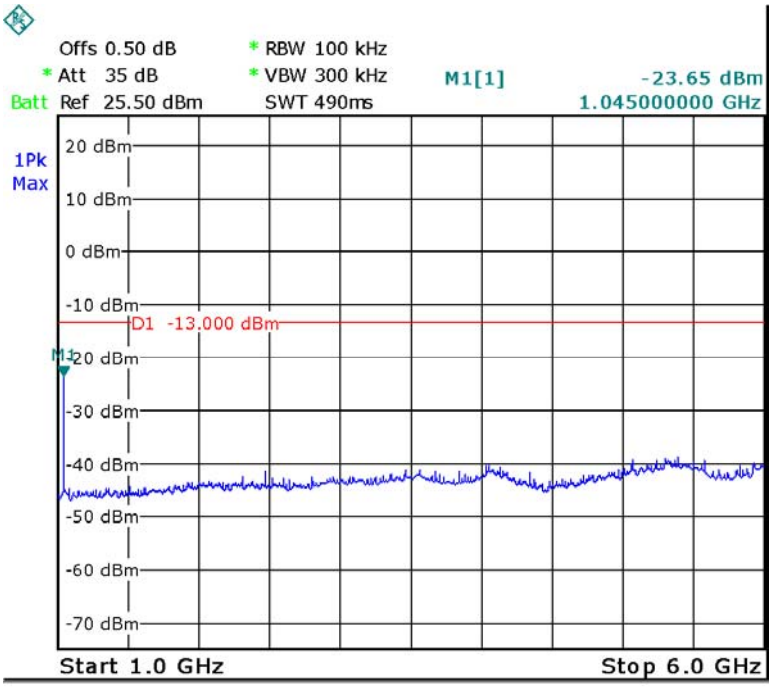
Low Channel



30MHz-1GHz

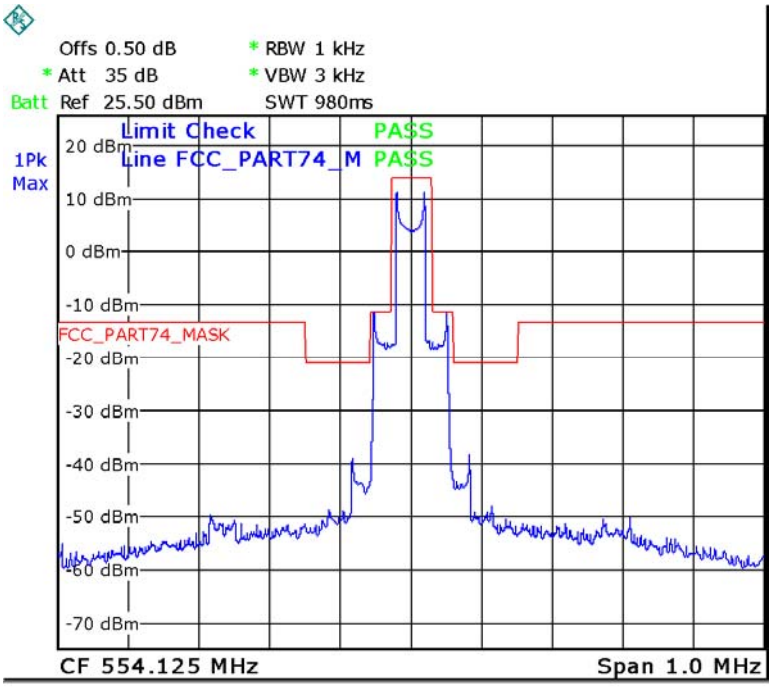


1GHz-6GHz

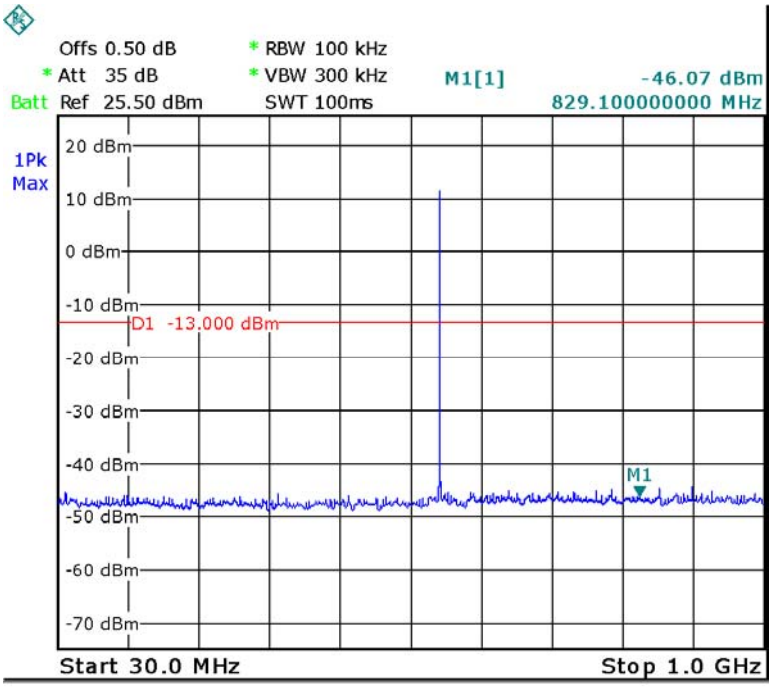

Offs 0.50 dB
* RBW 100 kHz
* Att 35 dB
* VBW 300 kHz
M1[1]
-23.65 dBm
Batt Ref 25.50 dBm
SWT 490ms
1.045000000 GHz
1Pk
Max
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -13.000 dBm
M1
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 1.0 GHz
Stop 6.0 GHz

Low Power Emission Mask

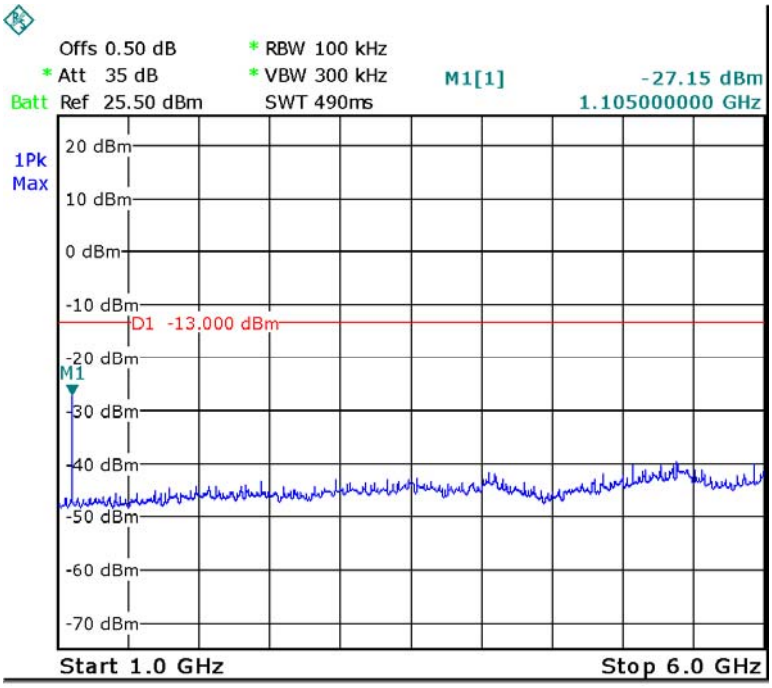
Middle Channel



30MHz-1GHz

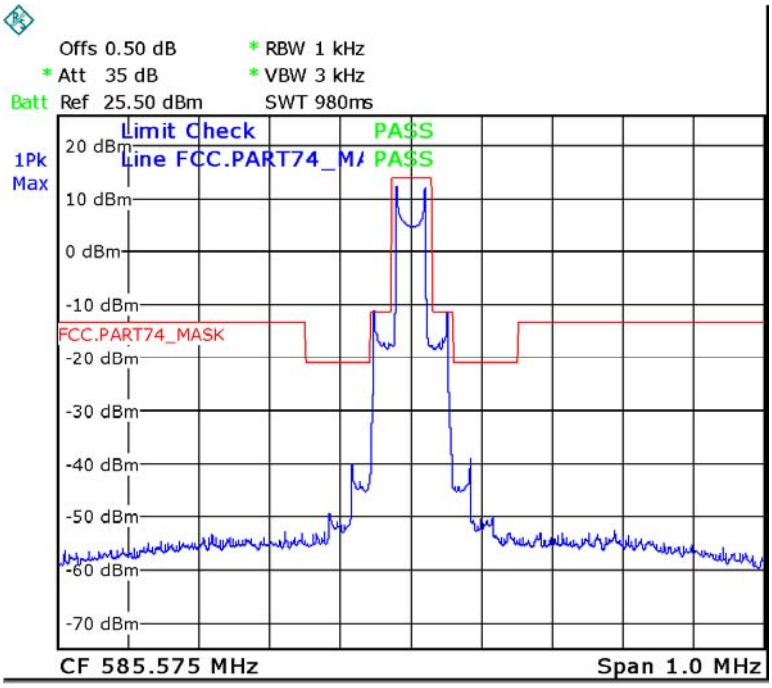


1GHz-6GHz

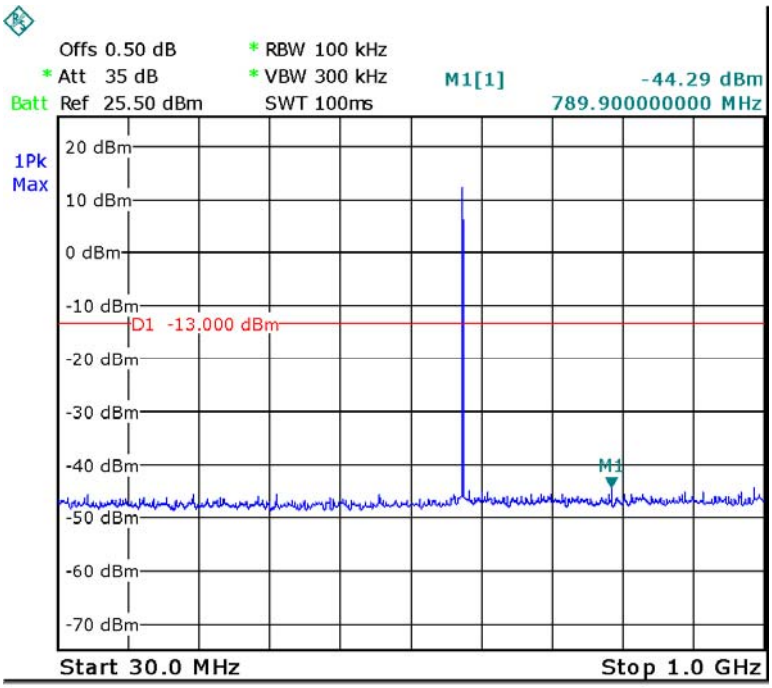

Offs 0.50 dB
* RBW 100 kHz
* Att 35 dB
* VBW 300 kHz
M1[1]
-27.15 dBm
Batt Ref 25.50 dBm
SWT 490ms
1.105000000 GHz
1Pk
Max
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -13.000 dBm
-20 dBm
M1
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 1.0 GHz
Stop 6.0 GHz

Low Power Emission Mask

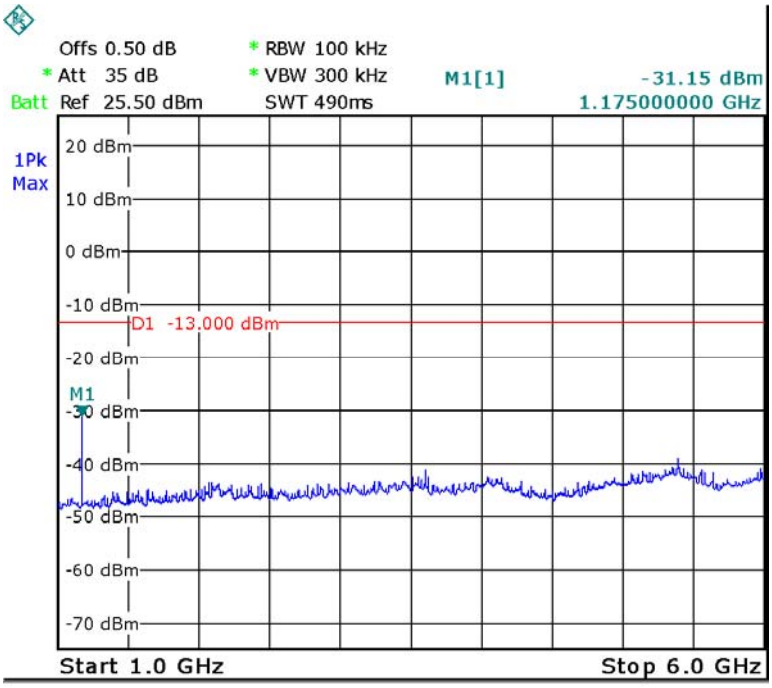
High Channel



30MHz-1GHz

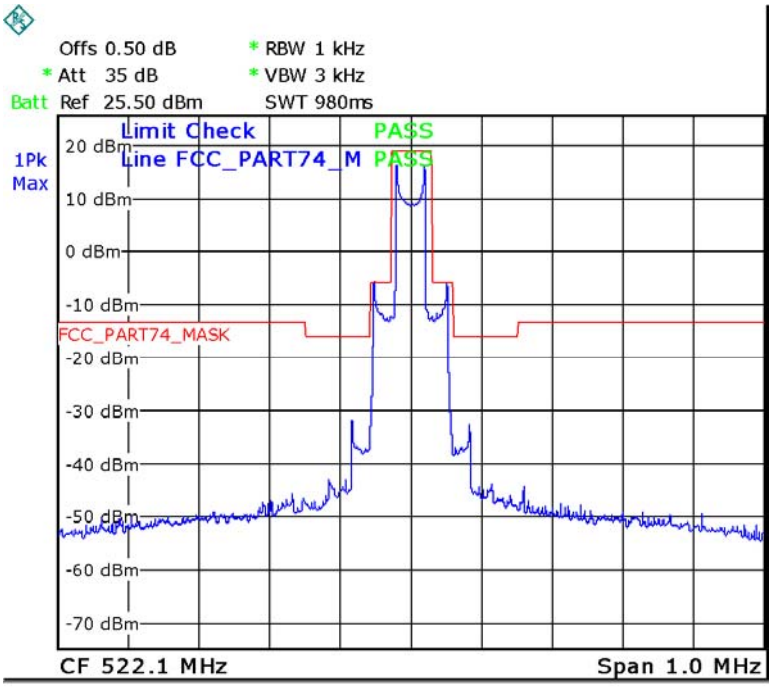


1GHz-6GHz

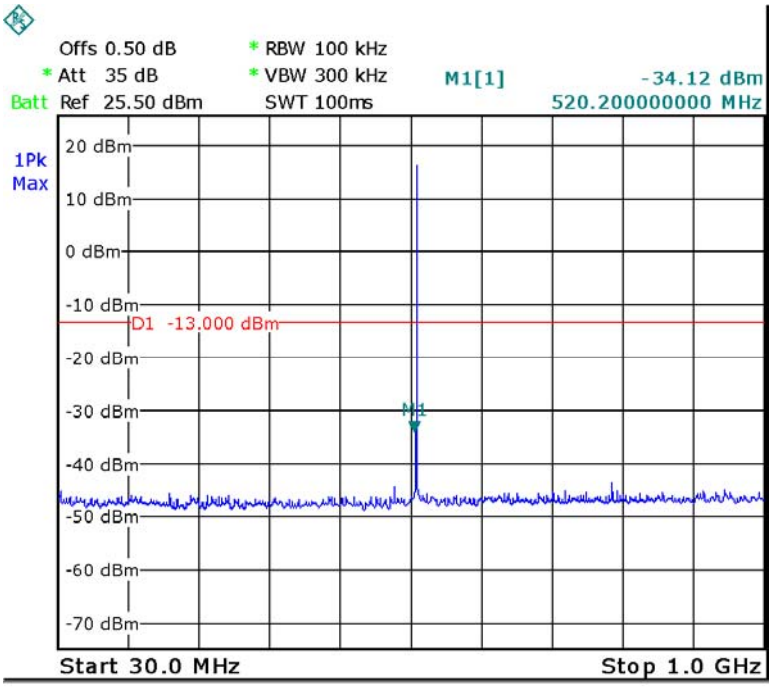

Offs 0.50 dB
* RBW 100 kHz
* Att 35 dB
* VBW 300 kHz
M1[1]
-31.15 dBm
Batt Ref 25.50 dBm
SWT 490ms
1.175000000 GHz
1Pk
Max
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -13.000 dBm
-20 dBm
M1
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 1.0 GHz
Stop 6.0 GHz

High Power Emission Mask

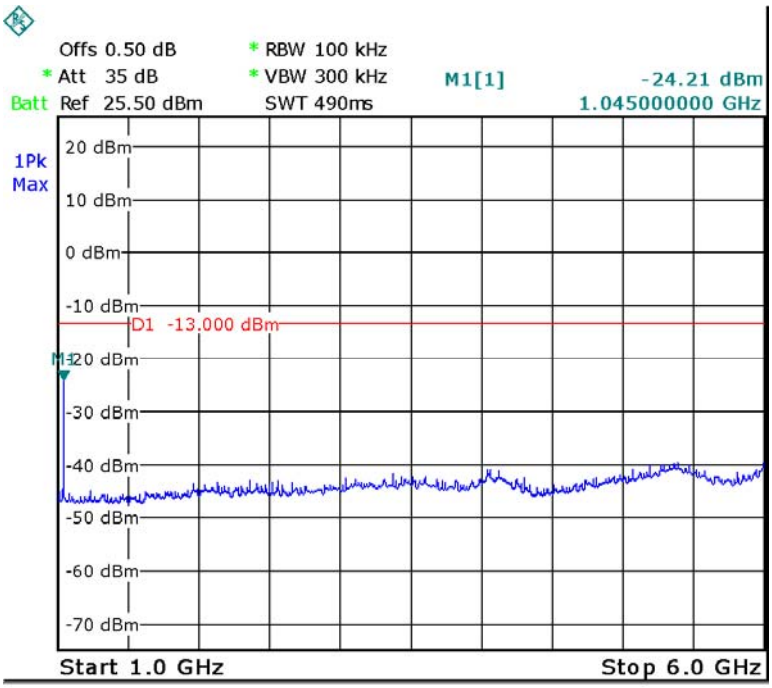
Low Channel



30MHz-1GHz

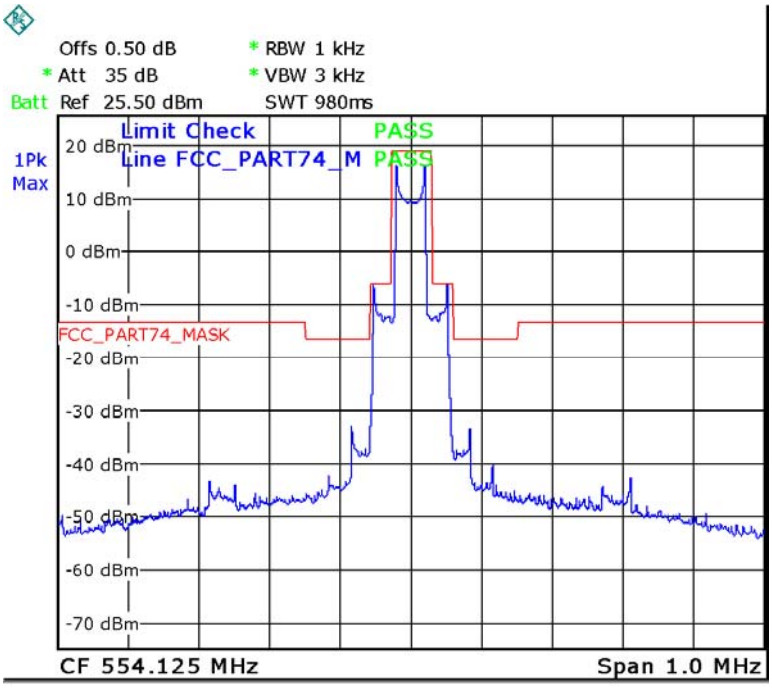


1GHz-6GHz

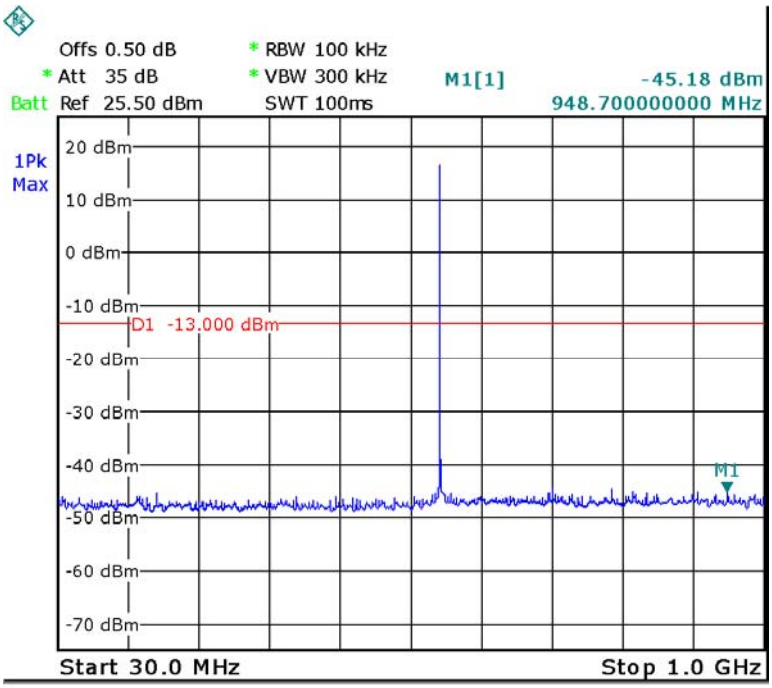

Offs 0.50 dB
* RBW 100 kHz
* Att 35 dB
* VBW 300 kHz
M1[1]
-24.21 dBm
Batt Ref 25.50 dBm
SWT 490ms
1.045000000 GHz
1Pk
Max
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -13.000 dBm
M1
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 1.0 GHz
Stop 6.0 GHz

High Power Emission Mask

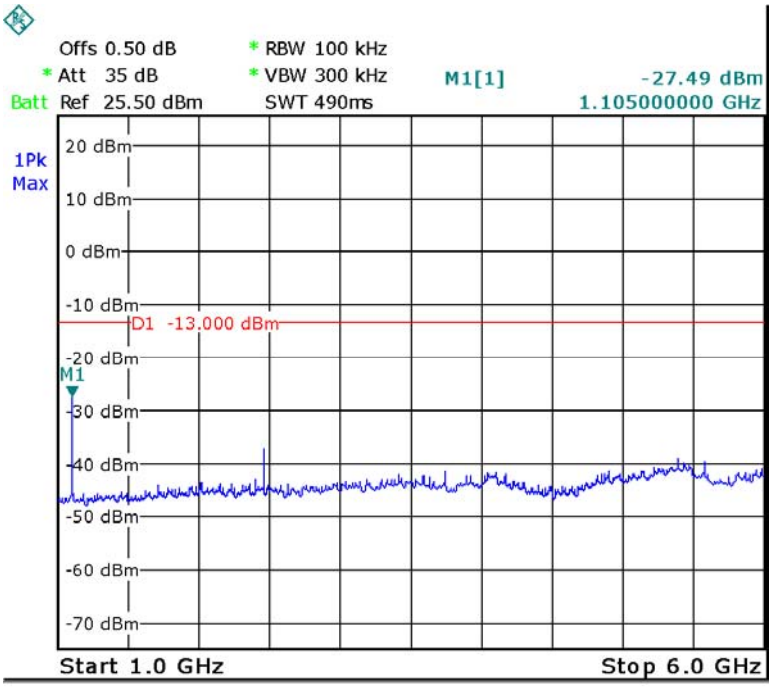
Middle Channel



30MHz-1GHz

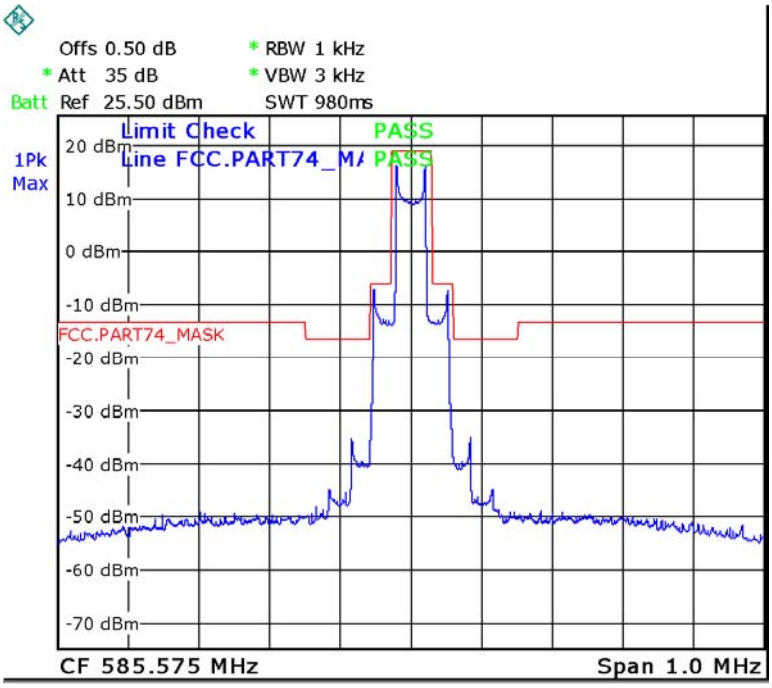


1GHz-6GHz

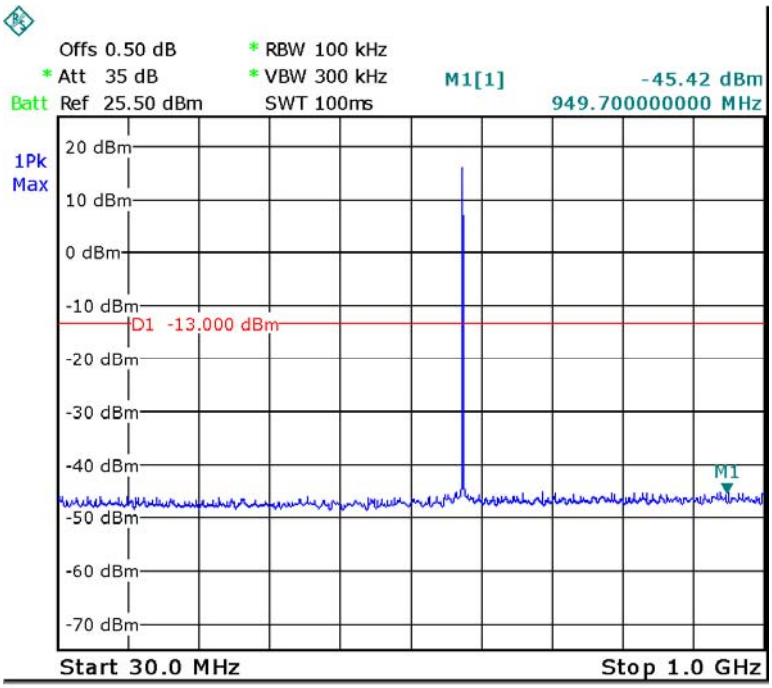

Offs 0.50 dB
* RBW 100 kHz
* Att 35 dB
* VBW 300 kHz
M1[1]
-27.49 dBm
Batt Ref 25.50 dBm
SWT 490ms
1.105000000 GHz
1Pk
Max
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -13.000 dBm
-20 dBm
M1
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 1.0 GHz
Stop 6.0 GHz

High Power Emission Mask

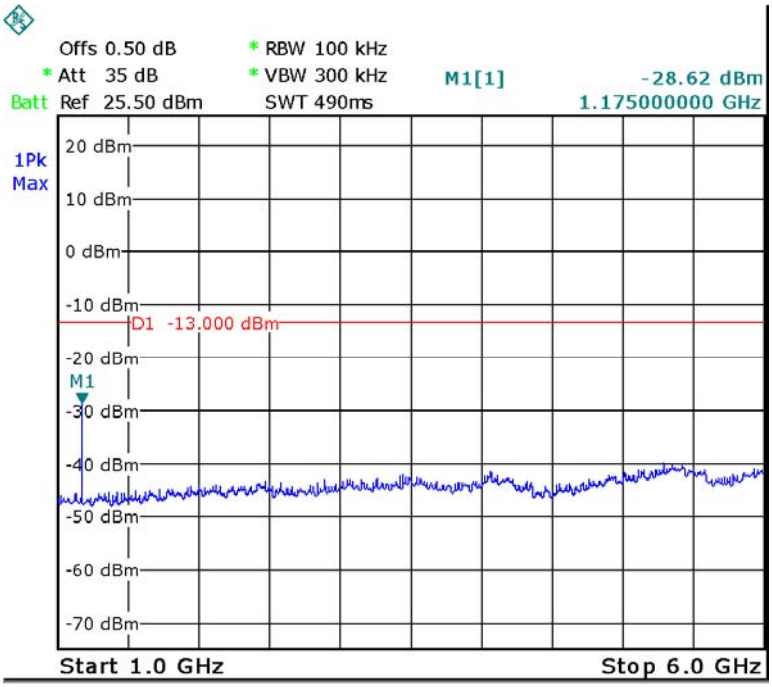
High Channel



30MHz-1GHz



1GHz-6GHz


Offs 0.50 dB
* RBW 100 kHz
* Att 35 dB
* VBW 300 kHz
M1[1]
-28.62 dBm
Batt Ref 25.50 dBm
SWT 490ms
1.175000000 GHz
1Pk
Max
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -13.000 dBm
-20 dBm
M1
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 1.0 GHz
Stop 6.0 GHz

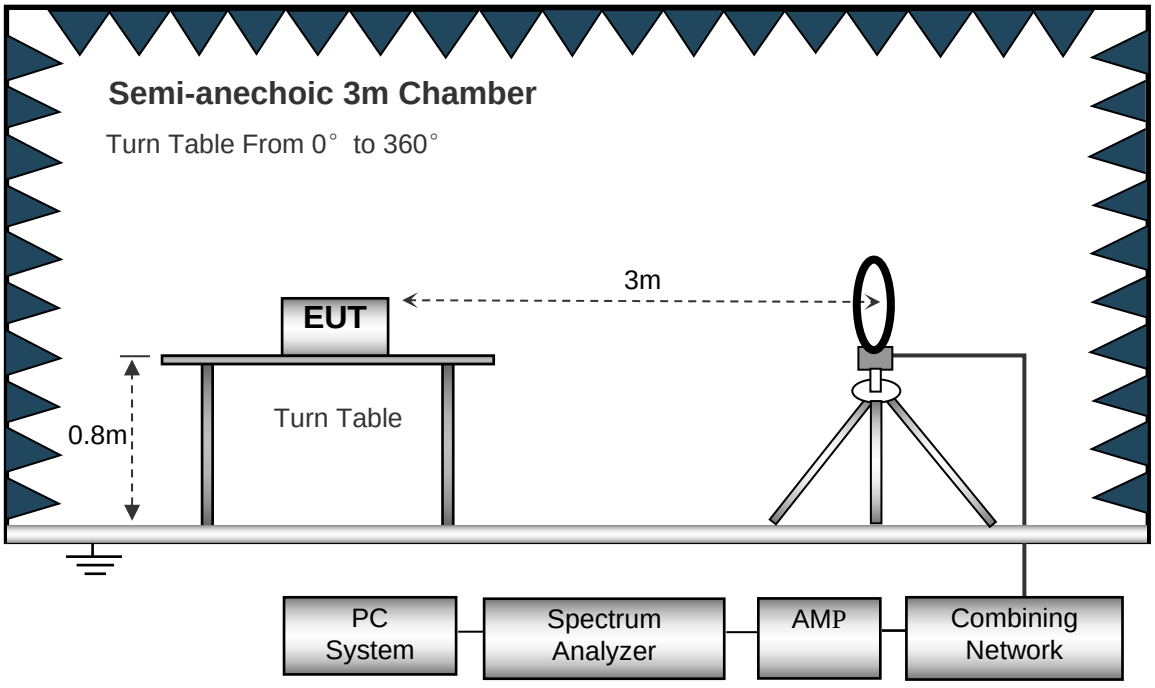
10 Radiated Emission Test

Test requirement:	FCC CFR47 Part 2 Section 2.1053
Test method:	Based on ANSI/TIA-603-D:2010
Limit:	According to Part 74.861 (e)(6), the mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule: (i) on any frequency removed from the operating frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: at least 25 dB. (ii) on any frequency removed from the operating frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: at least 35 dB. (iii) on any frequency removed from the operating frequency by more than 250 percent up to and the authorized bandwidth shall be attenuated below the un-modulated carrier by at least 43 + 10 Log (output power in watts)dB.

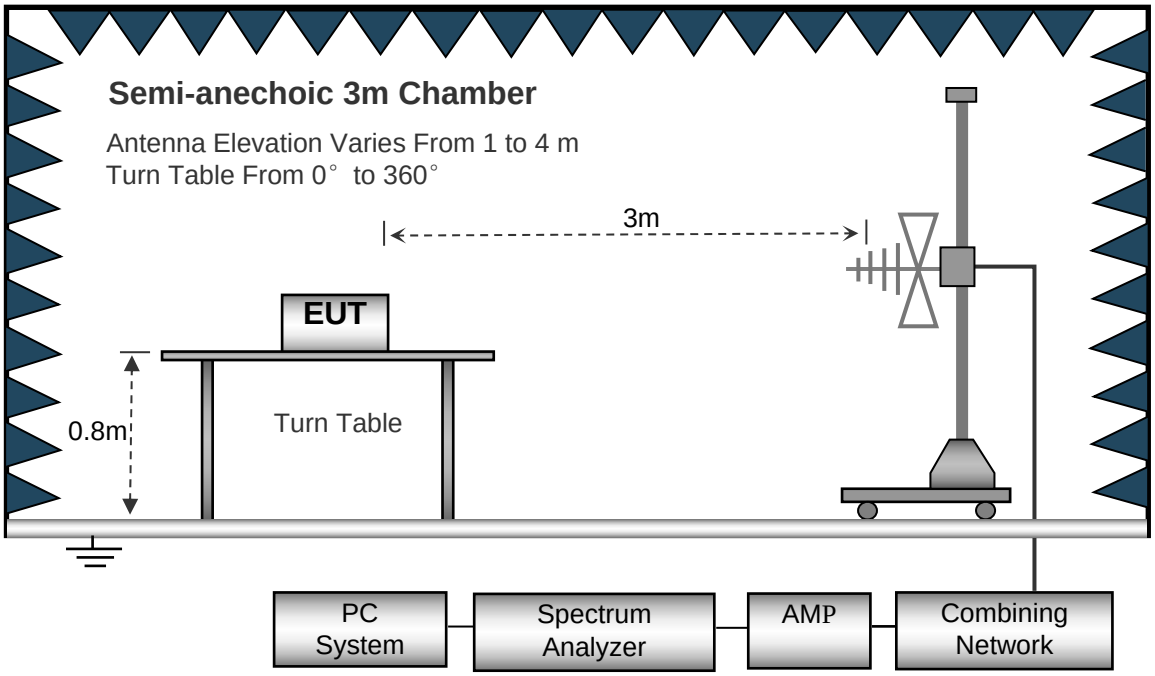
10.1 EUT Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.10: 2013.

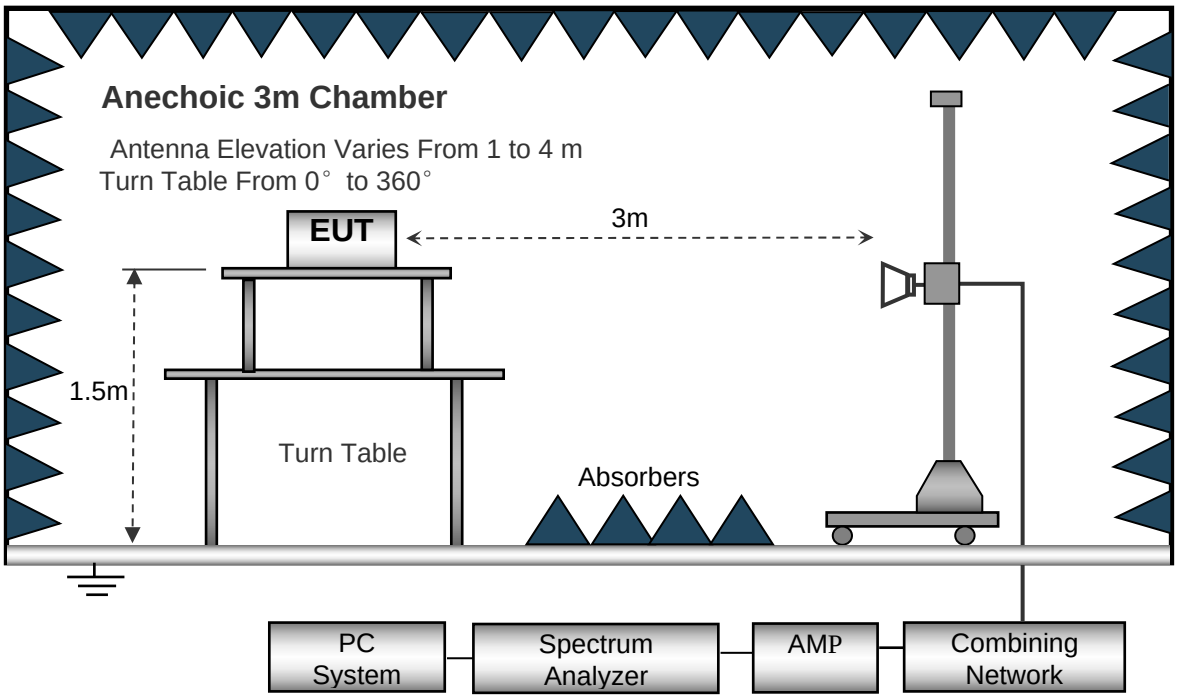
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 KHz to 30 MHz Emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 30 MHz to 1 GHz Emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission above 1GHz Emissions.



10.2 Spectrum Analyzer Setup

According to FCC Part 2 Section 2.1053 Rules, the system was tested 16MHz to 6000MHz.

9kHz ~ 30MHz

Start Frequency.....9kHz
Stop Frequency..... 30MHz
Sweep Speed..... Auto
IF Bandwidth..... 10KHz
Video Bandwidth.....10KHz
Resolution Bandwidth..... 10KHz

30MHz ~ 1GHz

Start Frequency.....30 MHz
Stop Frequency.....1000MHz
Sweep Speed..... Auto
IF Bandwidth.....120 KHz
Video Bandwidth.....300KHz
Quasi-Peak Adapter Bandwidth..... 120 KHz
Quasi-Peak Adapter Mode.....Normal
Resolution Bandwidth..... 100KHz

Above 1GHz

Start Frequency.....1000 MHz
Stop Frequency.....7000MHz
Sweep Speed..... Auto
IF Bandwidth.....120 KHz
Video Bandwidth.....3MHz
Quasi-Peak Adapter Bandwidth..... 120 KHz
Quasi-Peak Adapter Mode.....Normal
Resolution Bandwidth..... 1MHz

10.3 Test Procedure

1. The EUT is placed on a turntable. For below 1GHz, the EUT is 0.8m above ground plane; For above1GHz, the EUT is 1.5m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.

7. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.

10.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dBμV means the emission is 7dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – Class B Limit

10.5 Test Result

Low Power

Frequency (MHz)	Detector	Ant. Pol	Antenna Height (m)	Turntable Angle (°)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
Low Channel:522.100MHz							
1044.20	Peak	H	1.4	135	-42.21	-13	-29.21
1044.20	Peak	V	1.1	137	-43.04	-13	-30.04
1566.30	Peak	H	2.0	355	-44.36	-13	-31.36
1566.30	Peak	V	1.9	175	-45.68	-13	-32.68
2088.40	Peak	H	1.4	21	-45.94	-13	-32.94
2088.40	Peak	V	1.9	299	-46.34	-13	-33.34
Middle Channel:554.125MHz							
1108.25	Peak	H	1.7	217	-42.90	-13	-29.90
1108.25	Peak	V	1.4	14	-42.64	-13	-29.64
1662.38	Peak	H	1.2	173	-46.96	-13	-33.96
1662.38	Peak	V	1.8	25	-43.32	-13	-30.32
2216.50	Peak	H	1.0	62	-42.71	-13	-29.71
2216.50	Peak	V	1.2	102	-46.31	-13	-33.31
High Channel:585.575MHz							
1171.15	Peak	H	1.0	210	-44.32	-13	-31.32
1171.15	Peak	V	1.5	202	-47.31	-13	-34.31
1756.73	Peak	H	1.1	86	-47.63	-13	-34.63
1756.73	Peak	V	1.8	87	-42.36	-13	-29.36
2342.30	Peak	H	1.1	178	-44.31	-13	-31.31
2342.30	Peak	V	2.0	106	-47.36	-13	-34.36

High Power

Frequency (MHz)	Detector	Ant. Pol	Antenna Height (m)	Turntable Angle (°)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
Low Channel:522.1MHz							
1044.20	Peak	H	1.2	201	-41.36	-13	-28.36
1044.20	Peak	V	1.6	95	-42.39	-13	-29.39
1566.30	Peak	H	1.1	328	-44.74	-13	-31.74
1566.30	Peak	V	1.8	269	-45.11	-13	-32.11
2088.40	Peak	H	1.4	335	-44.12	-13	-31.12
2088.40	Peak	V	1.9	217	-43.39	-13	-30.39
Middle Channel:554.125MHz							
1108.25	Peak	H	1.6	321	-42.18	-13	-29.18
1108.25	Peak	V	1.1	131	-43.64	-13	-30.64
1662.38	Peak	H	1.8	307	-46.58	-13	-33.58
1662.38	Peak	V	1.5	105	-44.29	-13	-31.29
2216.50	Peak	H	1.6	231	-43.66	-13	-30.66
2216.50	Peak	V	1.1	350	-45.32	-13	-32.32
High Channel:585.575MHz							
1171.15	Peak	H	1.8	315	-44.34	-13	-31.34
1171.15	Peak	V	1.0	113	47.36	-13	60.36
1756.73	Peak	H	1.4	250	48.31	-13	61.31
1756.73	Peak	V	1.8	330	-42.37	-13	-29.37
2342.30	Peak	H	1.4	143	-44.39	-13	-31.39
2342.30	Peak	V	1.9	294	-48.36	-13	-35.36

The measurements below 1G were more than 20 dB below the limit and not reported.

11 Frequency Stability

Test requirement:	FCC CFR47 Part 2 Section 2.1055(a)(a)
Test method:	Based on ANSI/TIA-603-D:2010
Limit:	According to FCC 74.86(e)(4), the frequency tolerance of the transmitter shall be 0.005 percent.

11.1 Test Configuration

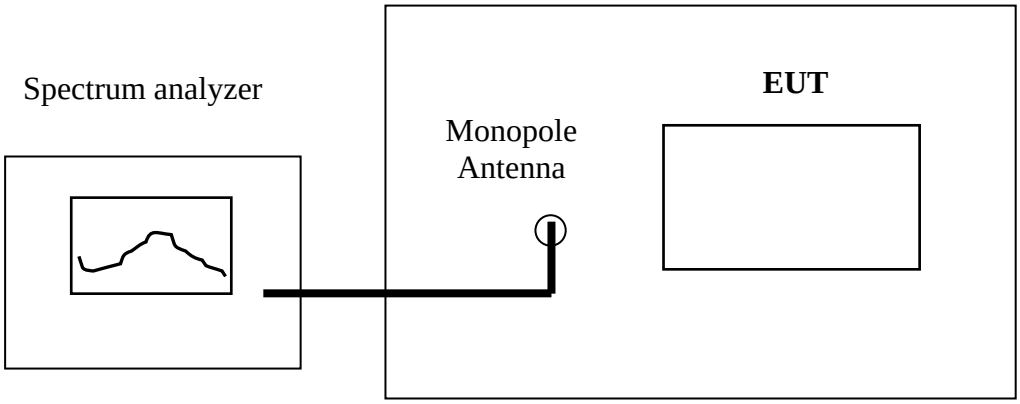


Figure 1

11.2 Test Procedure

A) Frequency stability versus input voltage

1. Setup the configuration per figure 1 for frequencies measured at an environmental chamber whose temperature is set to 20 ºC. Install new batteries in the EUT.
2. Set SA center frequency to the EUT operation frequency. Then set SA RBW to 30 kHz, VBW to 100kHz and frequency span to 500 kHz. Record this frequency to be a reference.
3. Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

B) Frequency stability versus environmental temperature

1. Setup the configuration per figure 1 for frequencies measured at an environmental chamber, Install new batteries in the EUT.
2. Turn on EUT and set SA center frequency to the EUT operation frequency, then set SA RBW to 30kHz, VBW to 100kHz and frequency span to 500 kHz. Record this frequency to be a reference.
3. Set the temperature of chamber to 50ºC. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. While maintaining a constant temperature inside the chamber, turn the EUT on and measure the EUT operating frequency.
4. Repeat step 2 with a 10ºC decreased per stage until the lowest temperature -30ºC is measured, record all measurement frequencies.

11.3 Test Result

a) Frequency stability versus input voltage

b) The EUT is power by two 5# Non-rechargeable AA batteries. The nominal voltage is DC 3V .so we select the extreme condition ±10% according with TIA-C603D section 1.4.4.3. low voltage is 2.7V DC and high voltage is 3.3V DC.

Low channel

Power Supply	Reference Frequency (MHz)	Environment Temperature (ºC)	Frequency Measured	Frequency Tolerance (%)
2.7V，DC	522.100	20	522.096	0.00077
3.3V，DC	522.100	20	522.105	0.00096

Middle channel

Power Supply	Reference Frequency (MHz)	Environment Temperature (ºC)	Frequency Measured	Frequency Tolerance (%)
2.7V，DC	554.125	20	554.121	0.00072
3.3V，DC	554.125	20	554.124	0.00018

High channel

Power Supply	Reference Frequency (MHz)	Environment Temperature (ºC)	Frequency Measured	Frequency Tolerance (%)
2.7V，DC	585.575	20	585.572	0.00051
3.3V，DC	585.575	20	585.573	0.00034

c) Frequency stability versus environmental temperature

Low Frequency:522.100MHz, Limit: 0.005%			
Environment Temperature(ºC)	Power Supply	Frequency Deviation measured with time Elapse(30 minutes)	
		MHz	%
50	3V，DC	522.100	0.00006
40	3V，DC	522.103	0.00066
30	3V，DC	522.099	0.00024
20	3V，DC	522.098	0.00040
10	3V，DC	522.101	0.00015
0	3V，DC	522.104	0.00072
-10	3V，DC	522.100	0.00001
-20	3V，DC	522.098	0.00034
-30	3V，DC	522.099	0.00017

Middle Frequency: 554.125MHz, Limit: 0.005%			
Environment Temperature(ºC)	Power Supply	Frequency Deviation measured with time Elapse(30 minutes)	
		MHz	%
50	3V，DC	554.128	0.00059
40	3V，DC	554.126	0.00014
30	3V，DC	554.130	0.00096
20	3V，DC	554.123	0.00035
10	3V，DC	554.122	0.00056
0	3V，DC	554.120	0.00087
-10	3V，DC	554.129	0.00071
-20	3V，DC	554.129	0.00071
-30	3V，DC	554.127	0.00031

High Frequency: 585.575MHz, Limit: 0.005%			
Environment Temperature(ºC)	Power Supply	Frequency Deviation measured with time Elapse(30 minutes)	
		MHz	%
50	3V，DC	585.579	0.00070
40	3V，DC	585.570	0.00088
30	3V，DC	585.578	0.00050
20	3V，DC	585.569	0.00095
10	3V，DC	585.576	0.00011
0	3V，DC	585.570	0.00080
-10	3V，DC	585.570	0.00081
-20	3V，DC	585.578	0.00057
-30	3V，DC	585.578	0.00043

Test Result: The max frequency tolerance rating is 0.00096% < 0.005%. Passed.

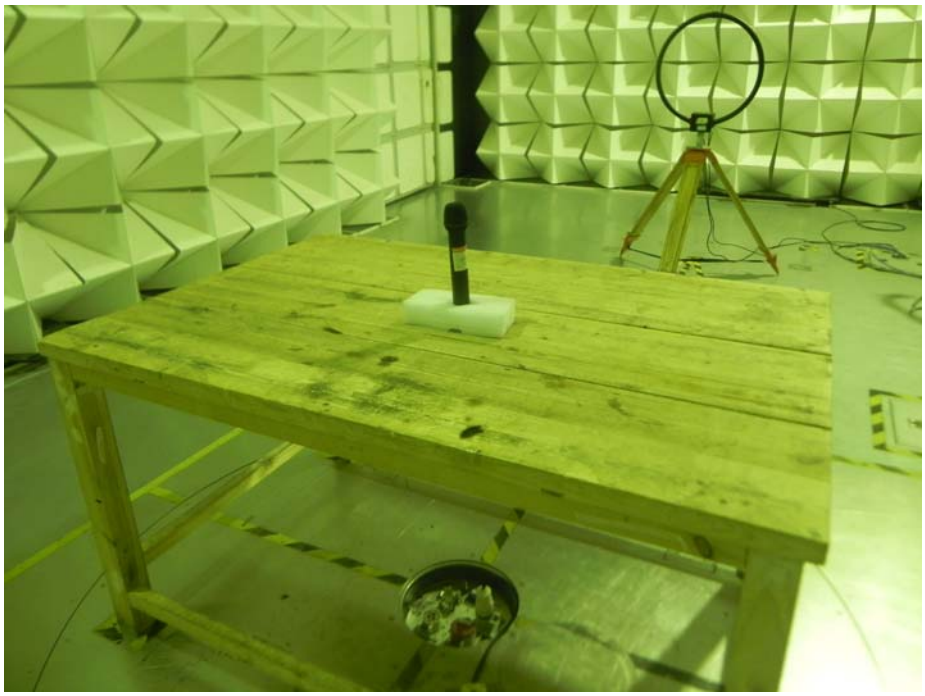
12 RF Exposure

Remark: refer to WTS16S0551685-2E SAR Test Report

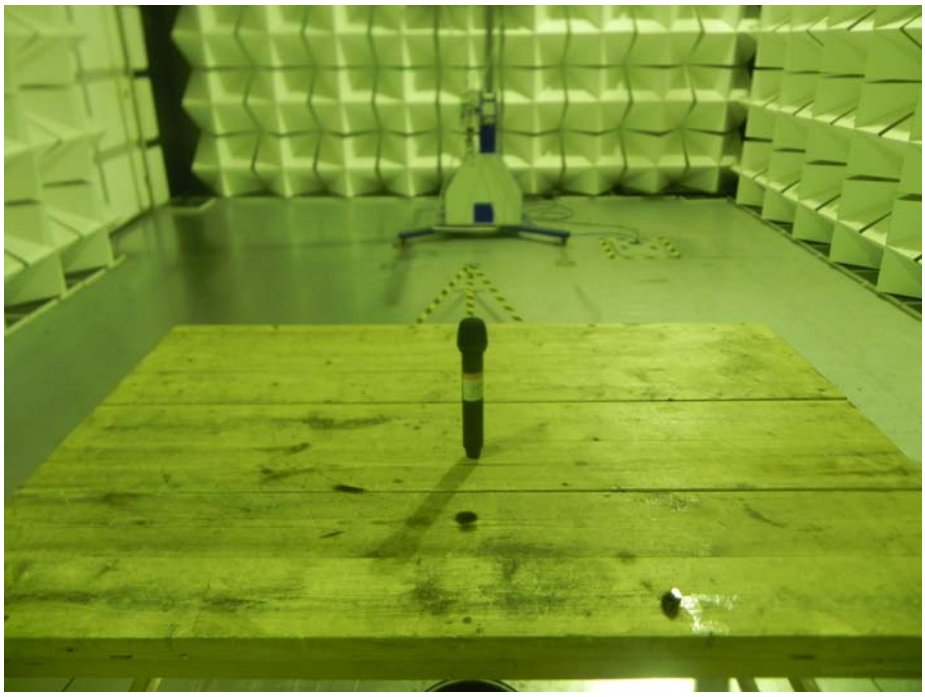
13 Photographs –Model H60 Test Setup

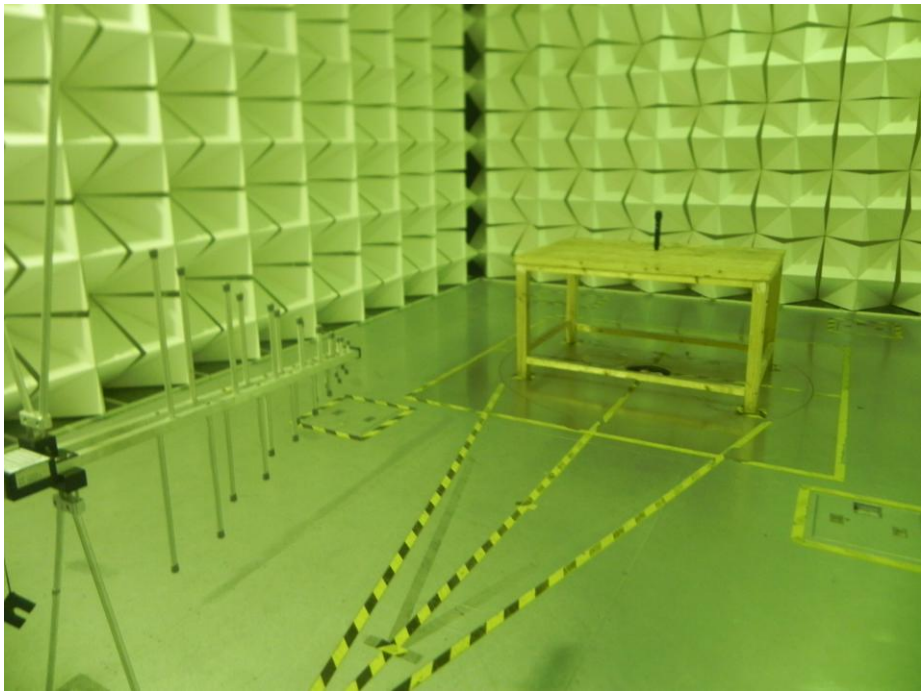
13.1 Photograph – Radiation Spurious Emission Test Setup

16MHz ~30MHz at test site 2#



30MHz-1GHz at test site 2#





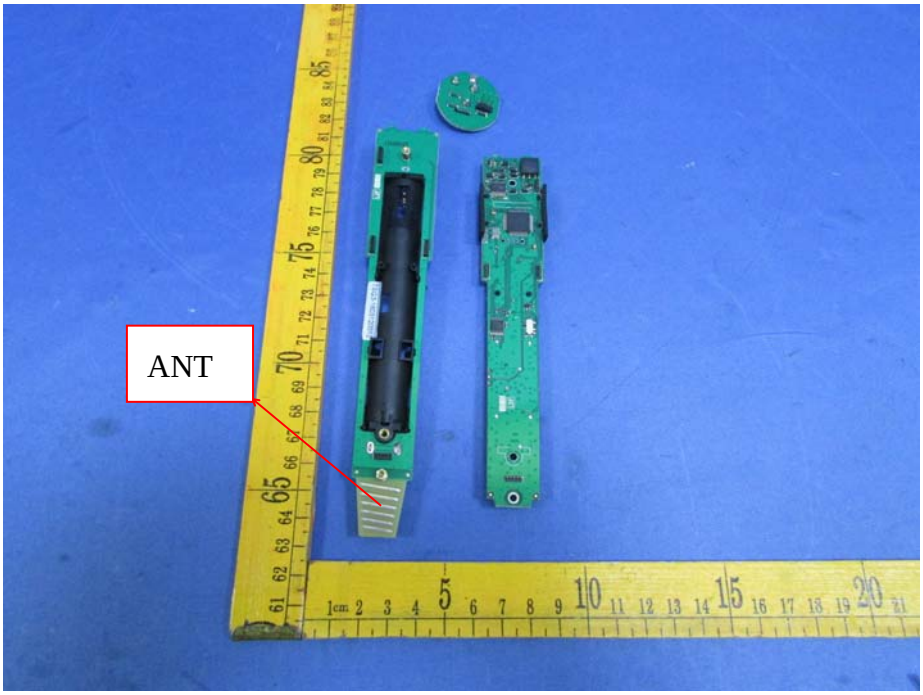
1GHz-6GHz at test site 1#

14 Photographs – Constructional Details

14.1 EUT –Model H60 External Photos

14.2 EUT –Model H60 Internal Photos


AUDIX
AUDIX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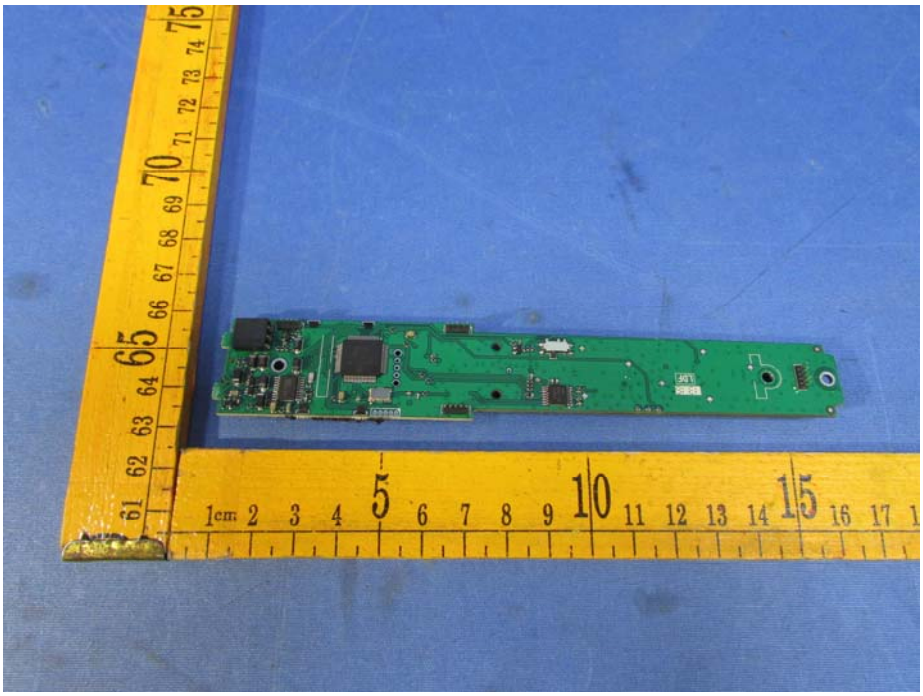
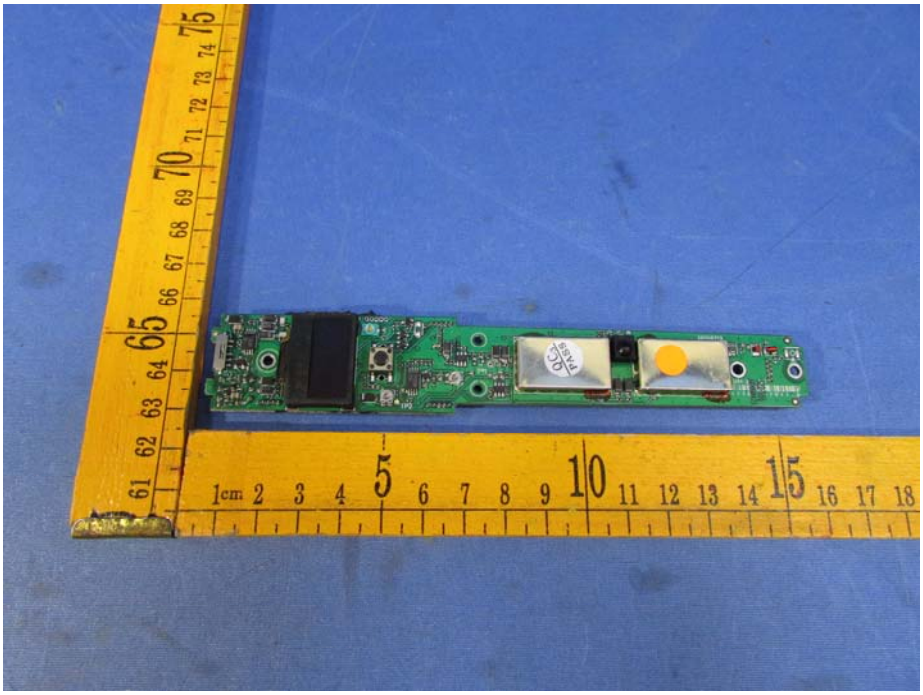
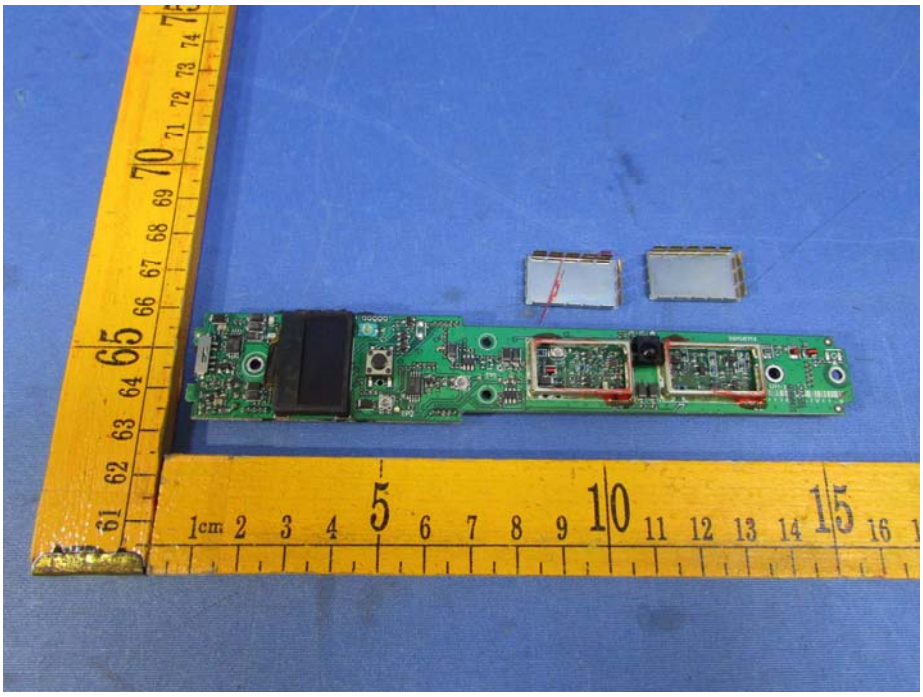
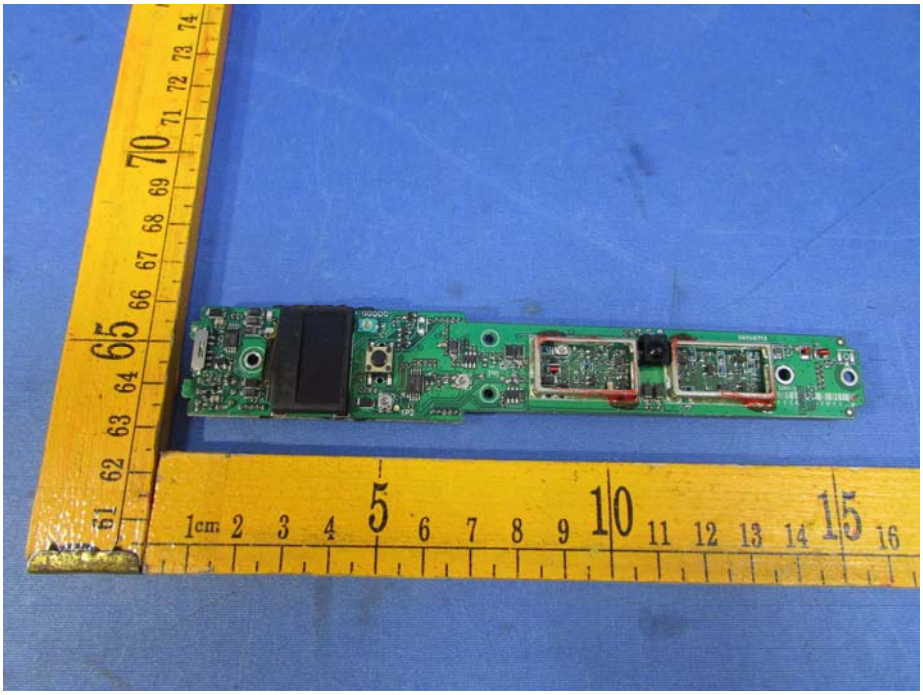
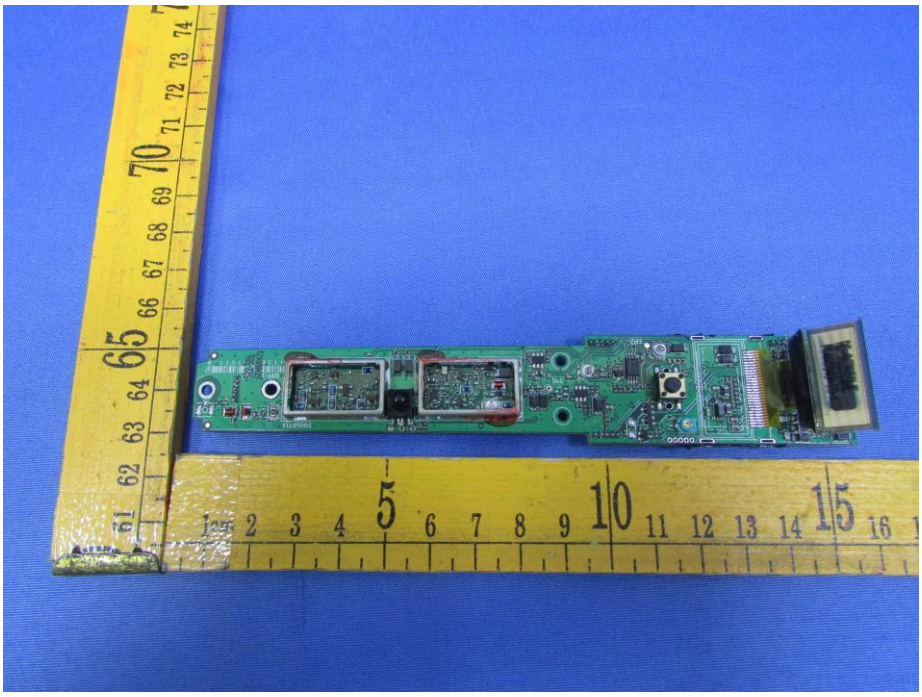
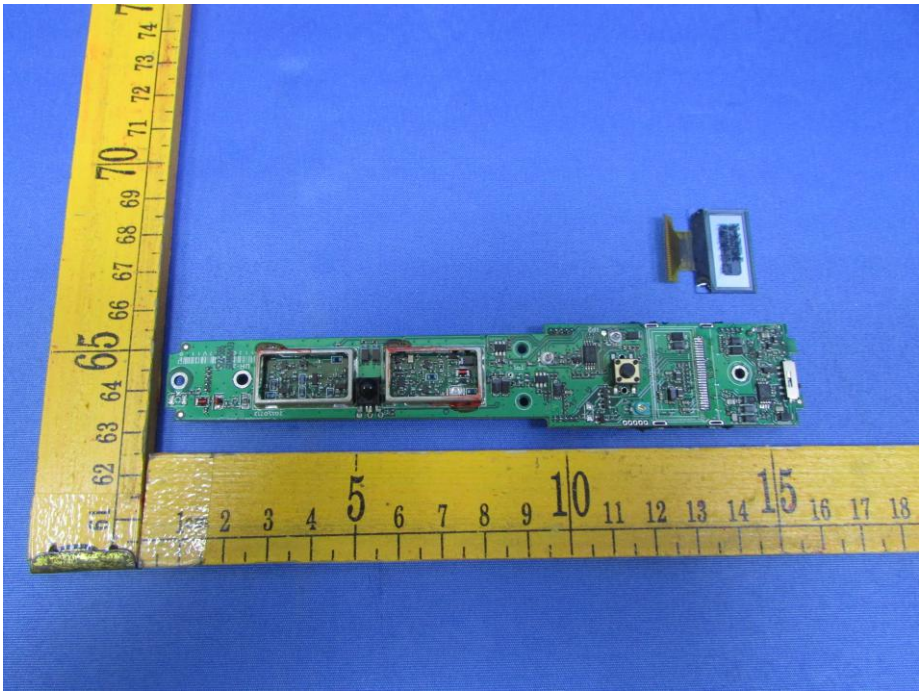


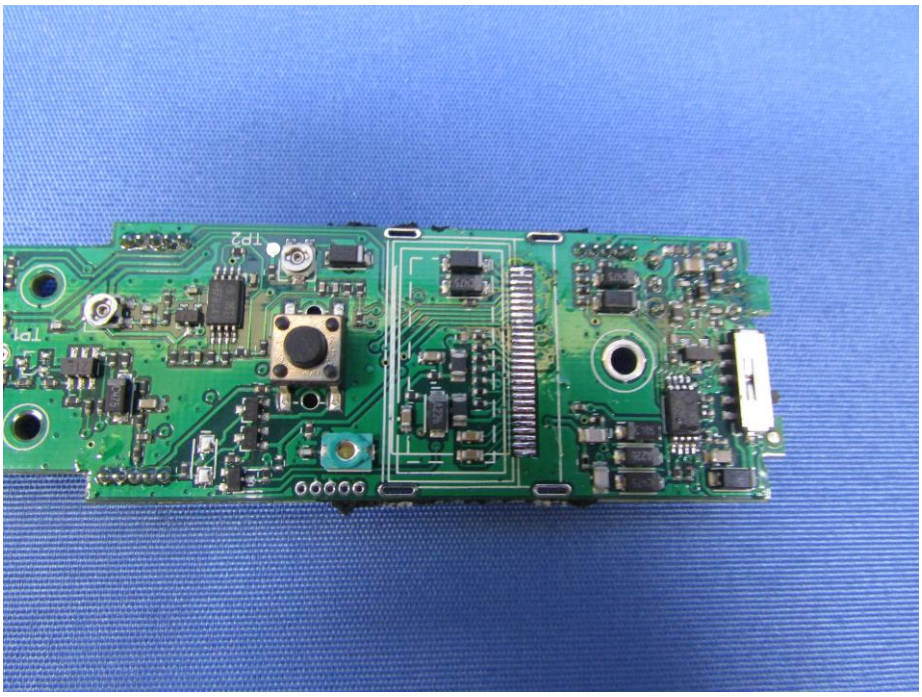


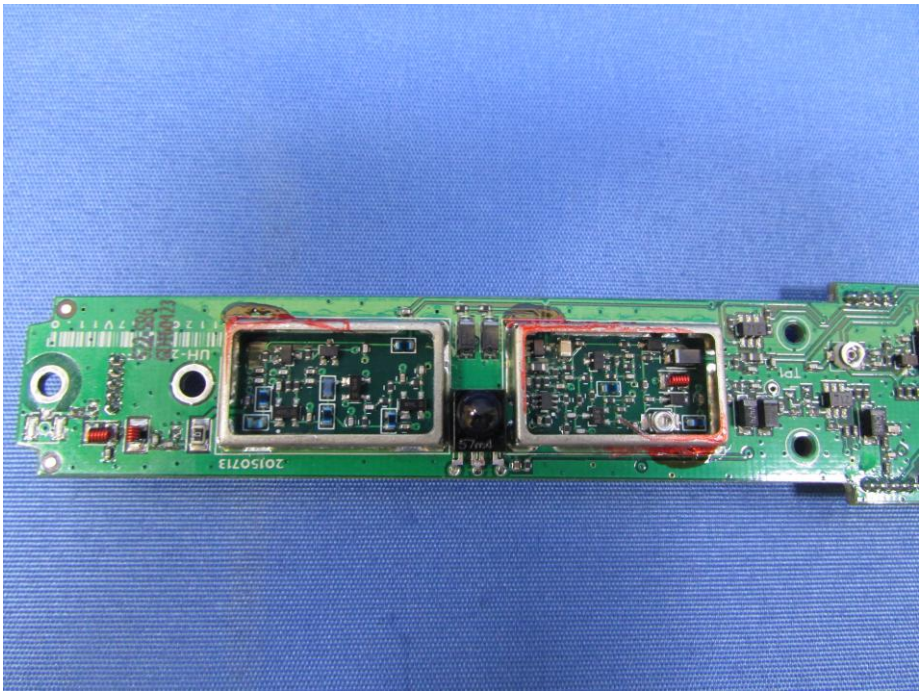


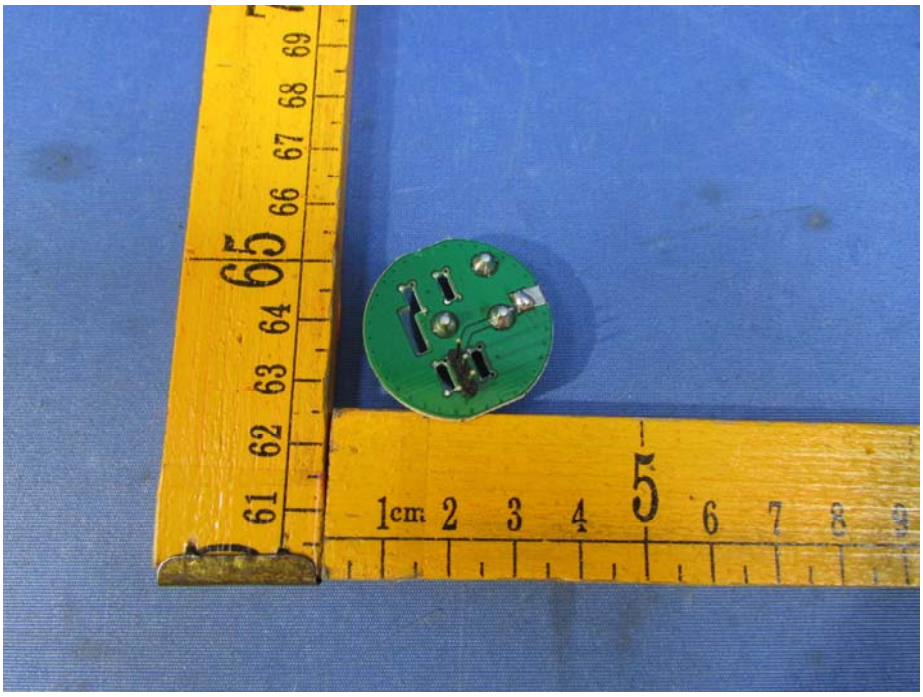


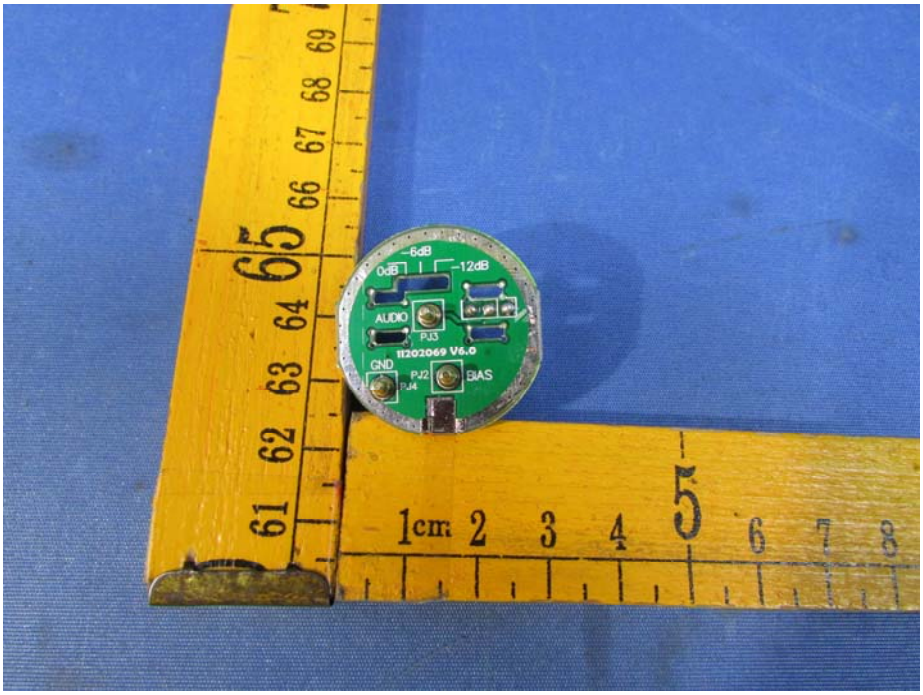


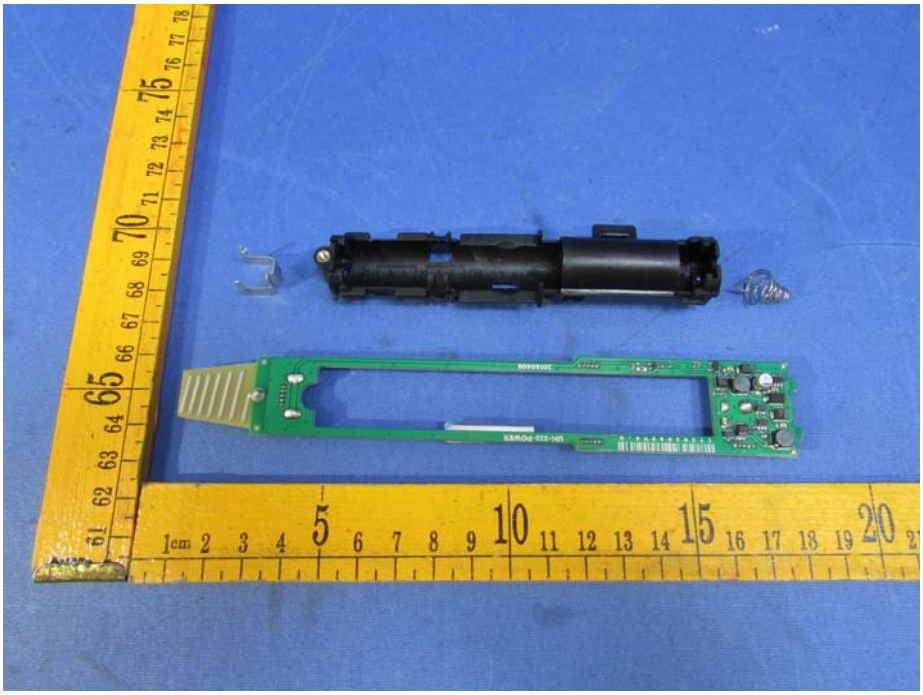


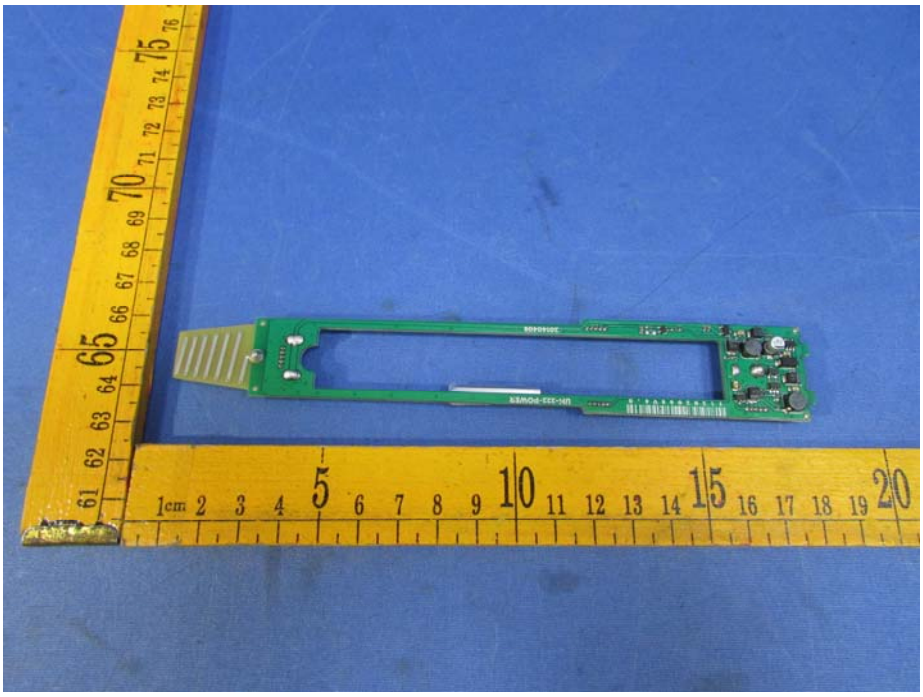


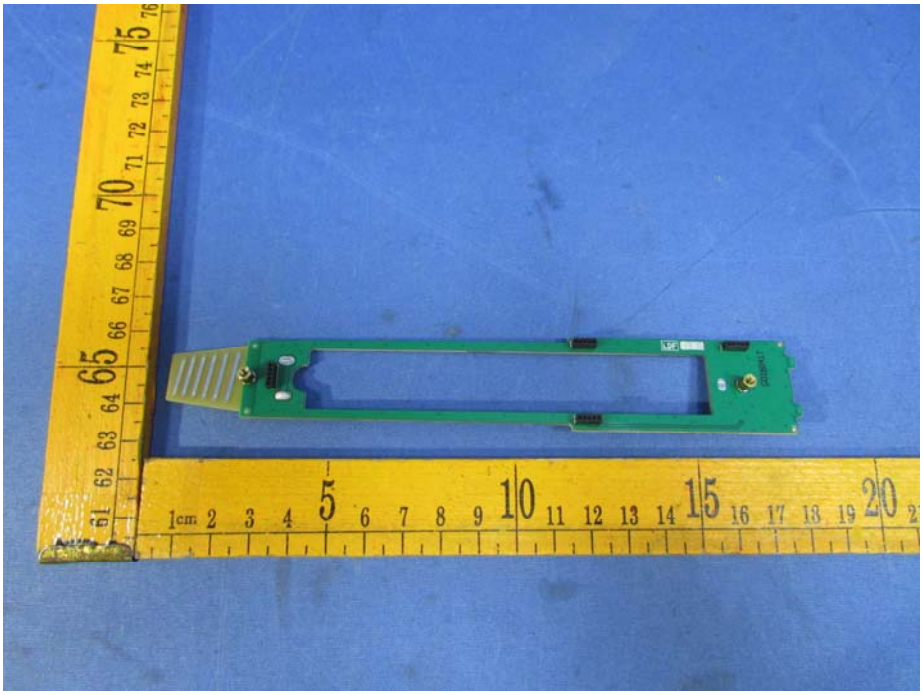





-6dB
0dB
-12dB
AUDIO
PJ3
GND
PJ2
PJ4
BIAS







======End of Report======